

ITEMS OF INTEREST.

VOL. XII.

PHILADELPHIA, AUGUST, 1890.

No. 8.

Notes from the Profession.

Continuous Gum on Cast Metal Base.

DR. C. H. LAND, DETROIT, MICH.

THE new process of uniting vitrified surfaces by means of a solution of gold in combination with amalgam has made it possible to unite cast metal bases to continuous gum sections, or gold or any other suitable metallic base. I find this combination cheap, strong and durable, especially in lower dentures. A cast metal base is, in many instances, desirable and practical. In upper dentures it may also prove advantageous, but I prefer a gold base.

In this new art I contemplate placing on the market entire porcelain dentures of fourteen teeth; they will consist in a series of various sizes that will approximate within a reasonable range the shape of the various alveolar ridges, representing both the long and the short bite, etc. Each section will be provided with the coating of gold, so that when the metal base has been adjusted to the mouth, and also adapted to the prepared porcelain denture, it will then require but a very thin coating of amalgam, added to the gold coating and to the metal base, to serve as a means of uniting them in a thoroughly reliable and durable manner. When allowed to harden, the adhesion will sustain a weight of over two hundred pounds to the square inch.

The fact that the manufacturer will be able to provide beautiful continuous gum dentures ready for adjustment to any suitable metallic base, and at a very reasonable price, compared with those set on platina, must be appreciated. Then add to this the probability of the work being better than the old methods in cheapness, strength, beauty and adaptation, and much easier to repair. There is no furnace required, no platina. Not even pins will be necessary.

Even in bridge work my first step is to provide a metallic foundation of gold, which may consist of a simple bar passing from one root or tooth to another. I then burnish a piece of platina foil to fit the bar, or bridge. To this platina matrix I fuse the teeth and any artificial gum that may be necessary; and when completed the platina foil is peeled off and a solution of gold baked in its place. Here we have a section of porcelain suitable for amalgamation to the bar of gold, which, when established in the mouth, provides an invisible denture on an indestructible foundation. It is the ambition of my life to be able to practice dentistry on the basis of invisible operations, so that every time my patients open their mouths the tracks of crude dentistry will not be seen.

With the facilities now at my command, my whole time is employed in the building of indestructible foundations, either of gold, silver or amalgam. These metallic foundations are then clothed with porcelain. Whether it is a simple filling, partial crown, or an entire crown, bridging, partial dentures, or entire dentures, all are done after the method of continuous gum work. While in some instances I may prefer to use the zinc cements, I can certify to the fact that had I nothing but the old abused amalgam, the porcelain process of restoration would be a success beyond computation.

Physiology*—No. 1.

PROF. J. F. SANBORN, M.D., TABOR, IOWA.

PHYSIOLOGY treats of matter in the living state, and embraces the functions of the organism that sustain life.

Of the four planes of matter, two are within the province of chemical affinity, and embrace all matter in the inorganic state; the other two are within the province of life as a force that raises matter to planes three and four, and sustains all actions on those planes. Physiology teaches the laws that control matter on planes three and four, and may be divided into vegetable and animal physiology. A prominent reason why physiology is not better understood, and more loved as a study, is the abstract character of the manner it is taught.

In the study of astronomy there is a philosophy of the motion of the sun, the earth, the moon, and all the planets, that being once known, the exact position of any one of them in the solar system, at any given time, may be calculated.

The rise and fall of the tides, the eclipses of the sun and moon, the transit of any of the planets, and other phenomena of nature, are calculated with a wonderful degree of exactness.

The study of physical sciences is carried to such perfection that machinery ministers to the wants of man in vast variety.

Chemistry is making rapid strides toward comparative perfection. In physiology there is an application of the laws of matter in its relation to force, a philosophy of vital action, that is lost sight of. Hence, it is studied as a collection of abstract facts that have little relationship to each other. If we wish to understand mechanics we must study the laws of physics, with the relationship between cause and effect. If we would study matter in its numerous elements and various compounds we must study chemistry. In the study of physiology both these should be understood. In the study of pure mathematics there is such a definite relationship between the various parts of the equation that there is always a definite answer, but in physiology there are parts of the problem not as well known as those of mathematics. Hence, because of our limited knowledge of the unknown quantities there is variable uncertainty; but when the laws of matter in their relationship with vitality are applied, then many of the obscure phenomena become comparatively within the reach of our apprehension. There are four planes of matter: 1st, that of the atoms, as oxygen (O), hydrogen (H), nitrogen (N), etc.

There is an affinity between atoms that attracts to each other, to form molecules (molecule—a little mass), which is the simplest form of matter. The atoms in the pure, uncombined form, is found as the atmosphere, the N and O being independent of each other, and existing as a mechanical mixture, as much so as potatoes and apples placed in a measure, where we can take one or the other at will. In respiration both the N and O are inhaled, a portion of the O is absorbed, and the remainder, with the N, is exhaled.

In nitrous oxide the N and O are united to form a new compound, united chemically (N_2O) to form molecules, and there is no separating them, as in the mechanical mixture constituting the air.

If the nitrous oxide is inhaled as an anesthetic, the compound gas occupies the respiratory space in the bronchial tubes and air vessels, but no O can be absorbed from it, for the lungs do not act as a chemical laboratory for the decomposition of this chemical compound.

For this reason N_2O has no vitalizing properties. Two or more atomic elements united, so as to balance each other's affinities, are known as stable compounds; for example, CO_2 , H_2O , NH_3 .

Stable compounds are as high as chemical force can raise matter toward the plane of organization, and all chemical compounds on plane two are devoid of life.

* Written expressly for THE ITEMS OF INTEREST.

A stone is composed of various molecular combinations, as silex, mica, feldspar, to form granite, and may increase in size by accretion, or diminished by attrition. It may have a molecular motion, that constitutes temperature, as hot, warm, or cold; but no manifestation of independent life motion. In all organic substances the increase in size is by assimilating matter received as food, and raised to a higher plane of organization on becoming tissue, where the organic cell structure is builded from within outward.

The inorganic stable compounds are utilized as the substances out of which vegetable life force builds up its structure, so that plants are not organized by chemism, but by a force above it, and on a higher plane, and is executed by a life force. It is a law of matter that in all its changes, from plane two to planes three and four, it must pass by way of vegetable life force, through the vegetable cell, and never in any other manner.

Animal structure on plane four is developed primarily from the proximal principles of vegetable cell structure; or, secondarily, from animal tissue that was primarily developed from vegetable cell structure. These proximate principles, as starch, dextrine, sugar and gluten, when developed in proper proportions, as found in our edible vegetable products, fruits and cereals, constitute proper food for the animal kingdom. The animal kingdom has no power to appropriate as food matter on plane two, much less from plane one.

Matter, then, in its change of plane of development, must go up, step by step, without missing one; from atoms to stable compounds, by chemical force; from stable compounds to proximate principles, by vegetable life force; and from these to animal tissue, by animal life force.

Chemism never forms the proximate principles, nor does vegetable life that of animal tissue.

Each manifestation of nature's forces works within its own province, or part of the cycle of matter, as it passes from plane one to two, from two to three, and from three to four.

Each is necessary to its own province, and each works within its own bounds.

A Talk Back at the Editor.

DR. L. P. HASKELL, CHICAGO.

FRIEND WELCH:—The June *ITEMS* is so very emphatic in regard to the position I take in relation to the injurious effects of rubber plates, I desire to place some facts before your readers, that they may judge for themselves as to the pertinency of my reasons.

Having devoted forty-four years to prosthetic dentistry, and having used rubber for plates ever since its introduction, and metal plates constantly and extensively, I have had excellent opportunities for judging. For many years I have been in the habit of scrutinizing closely the condition of mouths as they have been presented in the inquiry for artificial denture, and I can say most emphatically I have found a wide difference in conditions under different materials. Furthermore, I have rarely seen a mouth where rubber has been worn a few years that there was not marked evidence of abnormal change in the alveola process; and where the adhesion of the plate was good, so the air did not get under it, almost invariably an inflamed condition of membrane. This, too, where plates were smooth and kept clean. This condition sometimes occurs under metal plates, but rarely. But under the rubber, with its non-conductivity, it can scarcely be otherwise. I have found *invariably* a changed condition when metal was substituted for rubber.

With regard to undue *absorption* of process, I will repeat what I have many times stated, that this is not the correct way of stating the case. It is *not* absorption, but in consequence of retention of *undue heat* nutrition is impaired, and the waste matter at this point is not replaced, as elsewhere in the tissues; and my

authority is no less a personage than Dr. George Watt, one of the most scientific members of the profession. I have found, as a rule, that the change under a *temporary* rubber plate is much greater than formerly, under metal plates. And I have seen great numbers of cases where the process has been ruined by a few years' wear of rubber.

As to the *poisonous* effects of red rubber, I desire to present some cases; if the results can be accounted for on any other basis, do so. It has been repeatedly asserted that it was impossible for mercury, in the form in which it appears in rubber plates, to produce any effect on the system. Mitchell's "Chemistry," the accepted text-book for the dental colleges, has the following: "Prof. Salisbury says some of his students have used the copper test for mercury in rubbers. No response has been obtained *before* vulcanizing, but *after* vulcanizing, evidence of *abundance* of mercury has been obtained, showing a change to have taken place, due to a more soluble compound, or to metallic mercury."

Out of a large number of cases, I select the following, as they are so marked:

A lady residing in Topeka had for twelve years worn a red rubber plate. She suffered constantly from sore mouth, and finally severe stomach troubles and chronic diarrhea, which her physician failed to relieve. She came to consult me. I told her the plate was the cause, and substituted a metal one, platina, making what is known as "Continuous-Gum Work." She returned home. In six weeks she accidentally broke off a tooth and sent it to me for repairs. The plate was out of her mouth for a week, and in the meantime she wore her rubber plate. The next summer she was in Chicago, and told me her experience. After wearing her new set, till she broke them, her long-standing symptoms disappeared. On putting in the old set and wearing a week only, they re-appeared, but again disappeared on getting the new set back. She related her experience to her physician; he said he did not know she was wearing a rubber plate, and if he had, did not know there was any harm in it, but said he had been treating her for symptoms of *mercurial poisoning*, and could not imagine why he had failed to secure satisfactory results.

Mrs. B. had been wearing rubber plates for several years. Sore mouth, stomach trouble, and chronic diarrhea, to the extent of eight to twenty operations of the bowels daily, and from which she could obtain no relief. At last her attention was called to the injurious effects of rubber plates. She came to Chicago and had *metal* plates substituted, and her troubles vanished as if by magic. Singular coincidence, that a sister of this lady had precisely the same experience, and the substitution of metal plates, tho with *pink* rubber attachments, was a complete remedy for the stomach trouble and diarrhea.

A lady in Racine, after wearing a rubber plate several years, found her health seriously impaired, severe stomach troubles, a fearfully sore mouth, the sores extending to the outside, and latterly her throat in such condition that she could swallow only soft food. She consulted physicians. They told her the condition of her mouth and throat resulted from the condition of her stomach. The dentists did not know what to say, only that it *was possible* it was the result of wearing the rubber plate, but did not advise, as they only used rubber in their practice. At length a recent graduate of a dental college, Dr. C. C. Beebe, and who had already investigated the subject, was consulted. He told her at once the cause, and advised her to leave out the plate, except while eating. The symptoms disappeared, and he made a metal plate with the pink rubber attachments. For six months she had no trouble with her throat, but one day she called on the dentist with her throat again in bad condition. She said that her children had bantered her about chewing gum. They said "*she* could not do it with false teeth." To prove she could, she chewed for several days what is known as "rubber chewing-gum," made partly of red vulcanite. The result was as above stated.

These occur only when the individual is particularly susceptible to the effects of mercury, but I have more of them, and so have other dentists.

Plaster Casts.

DR. L. P. HASKELL, IN HIS MANUAL.

WHILE there is various methods of preparing the impression, I much prefer shellacing, always using it thin, so it will strike in, and not make a skin on the surface. By shellacing it is easy to tell what is cast and what is impression, when separating. Next, oil lightly, and turn the impression *face down* while mixing the plaster. Mix the plaster the same as for the impression, about the consistency of thick cream; place but little in the impression at first, and jar thoroughly so as to drive out all air. When hard, remove the cup, and with a sharp knife pare the impression to near the teeth, if there are any, or to the cast. With a blunt-pointed knife, proceed to break it away, beginning at the heel and pressing with the thumb to guard against the knife going into the cast.

For a *Full Upper*, make the following changes in the cast. In most cases, the palate is hard in the centre, and as the rest of the surface will yield invariably to pressure, the plate will bear hard and irritate, and rock. Therefore relief should be provided by raising the plate where the palatal bone is hard. If it is to be a rubber plate, scrape a portion from the plate when finishing. For a metal plate, it is better to raise with a *thin* film of wax along the entire hard palate, about $\frac{1}{32}$ inch in depth, graduating to the edges so as to show no line. The amount of surface thus covered will vary in different mouths; some quite wide, others narrow. At each side of the hard palate, at the posterior edge of the plate, *scrape* the cast slightly, so the plate will hug snugly there (Fig. 4). If there is a *flexible* ridge in front, its normal

condition is where the plate which has been worn has pressed it, and there it should remain, for no change of position will improve it; it would be better if the patient would submit to its removal.

No air chambers are needed in full plates. If the plate comes in close contact with the membrane, there will be all the adhesion necessary for the heaviest work.

Mix plaster, spread on a smooth surface, and set the cast into it, so as to make the whole about one and one-half inches high; if the cast is *slightly* undercut, *raise the front* a little, and then form the plaster around the sides so as to have them flaring. The object is to facilitate the removal of the cast from the mold, as it will deliver itself better than if removed with the fingers.

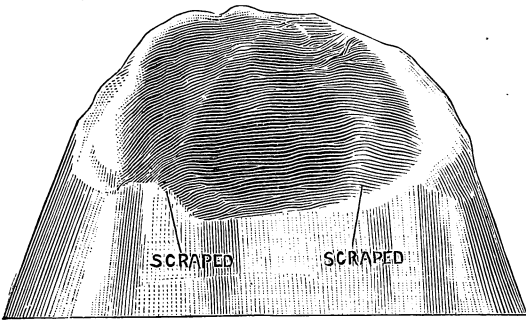


FIG. 4.

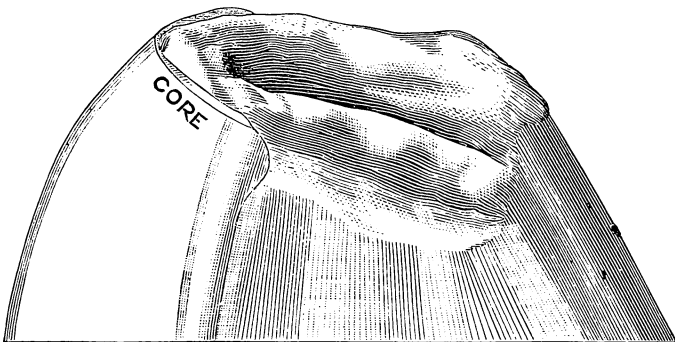


FIG. 5.

If the case is badly *undercut*, either in front or at the posterior corners, make a "core" (Fig. 5) as follows: Set the cast, after it is ready for molding, on a smooth surface; oil the surface where undercut; mix plaster and asbestos, equal parts, and lay on the surface one-quarter inch wide at the base, up to the top of the cast; when hard, remove, trim, and dry *perfectly* for molding.

For *Full Lower* prepare for molding as above, having previously to filling the impression *removed a little from the surface of it, in the extreme depression*, or what represents the summit of the jaw, so the plate will set more easily.

If the *lower* case, either full or partial, is badly undercut, make a "core," in two sections, one transversely across the heel to past the cuspid, and the other to lap on to this one (Fig. 6). In this way a perfect die may be obtained.

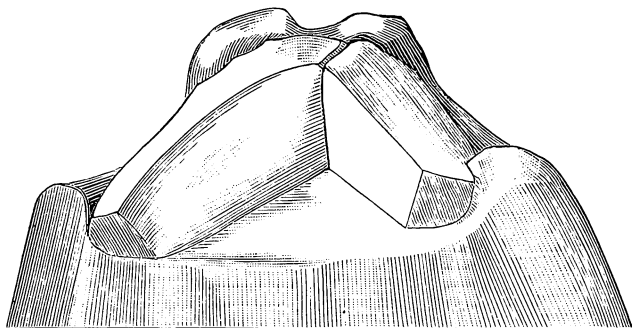


FIG. 6.

If it be a *Partial Lower*, leave the anterior teeth on the cast, building up with plaster against the front to have the cast flare, cutting off all other teeth from the cast.

For *Partial Uppers* cut off all teeth. If for *suction*, relieve the hard center, as in full sets; or if deemed best, put in an "air chamber." Some patients will wear a plate without, others will think they cannot.

Examination of the Teeth for Regulating.

DR. E. S. TALBOT, IN HIS "IRREGULARITIES."

WHEN an abnormal condition of the jaw and teeth is presented for examination the nicest discernment is necessary to decide the best course of regulating. A dentist possessed with ordinary intelligence has no difficulty in correcting an irregularity when a few teeth are out of position, but when the jaws and teeth are both involved, and the features are affected, judgment is necessary. That dentists are rarely able to conquer this problem is not to be wondered at when we consider the limited amount of instruction given in most text-books and colleges. The mouth is one of the most expressive features: more than any of the other features of the face it indicates age and characterizes the race to which it belongs.

The teeth are not developed into type peculiarities till the time of puberty, so that regulating should be delayed as long as is compatible with safety, to allow nature to arrange the teeth as far as possible before interfering with them. Thus, nature frequently corrects extensive irregularities, if left to herself. The facilities for regulating are now so much improved that there is no excuse for allowing deformities to remain, even tho they be inherited.

Speech is often interfered with by the contraction of the jaws. The upper or lower jaw, or both, may be so narrow at the bicuspid region that the tongue is forced into the fauces. The roof of the mouth may be high and narrow, or flat and shallow; the natural or supernumerary teeth may point in such a direction that the tongue cannot move properly. The incisors may be so separated, or the teeth may be so proportionately small, as to produce spaces sufficient to affect the speech.

Local Anesthetics.

DR. C. H. GILLMAN, VALLEY FALLS, KAS.

EDITOR ITEMS:—I write with reference to local anesthetics, hoping to benefit some one. I have experimented considerably during the last fifteen years, but never with the satisfactory results claimed by many others, one of whom I will mention. On May 10, 1890, Dr. O. L. Kean, of Creston, Ohio, came into my office claiming to have a local anesthetic, possessing all the desired qualities. He brought a letter of introduction from A. Dawson, M.D., of Meriden, Kansas, stating that Dr. Kean had spent two days at that place extracting teeth, and that he positively could do all he claimed, which was to extract teeth without pain, and without any bad results following the use of his anesthetic. Without the letter from Dr. Dawson, whom I have known for more than ten years, I should have given the subject little attention. However, this letter did influence me to stop my work and enter into a conversation on the subject of local anesthetics. Dr. Kean handed me a two-ounce bottle of his preparation, which I smelled, and then tasted, holding about half an ounce in my mouth a minute. After carefully noticing the effect, I said to him, "It must be nearly what I already have." This seemed to surprise the man from Ohio. Our local anesthetic was produced, and, after careful comparison of color, smell, and taste I could see little difference, tho Dr. Kean could see a wonderful difference, and greatly desired that I allow him to use his preparation on one of my patients, that I might see its wonderful effect. But thinking that the proof of the pudding was in the eating of it, I said, "Doctor, I have a tooth that must come out soon, so you may proceed with me, just as you would with any other person." I do not think he liked this suggestion, but he went boldly to work with a hypodermic needle, making four injections of his anesthetic, around the neck of the tooth. In about a minute the tooth was extracted, and I experienced about half the usual pain. Dr. Kean left our city without selling his anesthetic, or an "office right" to use it.

I shall never forget that dear doctor. No, sir! My mouth was too sore, and is hardly well yet. But I escaped better than some of my neighbors, especially Mr. W. H. Detchon, who was under the care of his physician for more than two weeks, and is still cussing the "painless dentist." Bad results followed each operation performed here by Dr. Kean, and varied only in proportion to the amount of the anesthetic used.

Here is the formula for a local anesthetic which is good, but I do not advise injecting it into the tissues :

| | |
|------------------------------|-----------|
| Rx. —Cocaine mur..... | gr. xxxv. |
| Ol. menth. pip..... | 3 ss. |
| Tr. aconite..... | 5 iij. |
| Sulph. ether | 3 ss. |
| Chloroform..... | 5 v. M. |

This is recommended for topical application by Prof. R. L. Cochran, lecturer in the Dental Department of the State University of Iowa. Dry the tooth and surrounding gums; then, with a piece of spunk saturated with this anesthetic, apply it where you want it, and no where else.

I have also found the following good in minor surgical operations, such as lancing a felon, or removing a small tumor from the scalp or face: Take any quantity of alcohol, and add menthol till you have obtained a saturated solution, then add twenty drops of chloroform for each ounce of alcohol. Apply with a small piece of cotton, or spunk, allowing the air to get to the parts freely for from three to five minutes. Then operate.

A Thick Tincture of Benzoine on cotton is an excellent substitute for sandarach as a temporary stopping. It is also more agreeable to some patients than chloro-percha. It deserves consideration also as a material for filling roots.—*Odontographic*.

Our Question Box,

With Replies from our Best Authorities on Dentistry.

Address all questions for this department to DR. E. N. FRANCIS, UVALDE, TEXAS.

Question 4. A. What is the proper way to prepare a central incisor for gold filling, when two-thirds of its cutting edge, and about one-half of the proximal surface, is broken away or decayed?

B. Do you prefer a light or heavy blow for malleting?

REPLIES.

A. I should devitalize and obtain sufficient anchorage in the root to hold the filling firmly.

B. I prefer short, light blow of an electric mallet. C. B. CRAGIN, D.D.S.

A. After removing all débris, and pulp not being exposed, I would insert a small screw and use non-cohesive foil for cavity, and contour with cohesive foil.

B. Medium light blow. J. C. MINTON.

A. I would give all the undercut I could; if too near the nerve, I would use gold screws.

B. I prefer a medium blow and plenty of them, to thoroughly consolidate the gold. C. L. BARROWS.

A. Cut it off and put a crown on. This gives less work, is stronger and more reliable.

B. Light blow. I am using the new Bonwill mechanical mallet, No. 2, which strikes a light blow, (at will) but condenses very rapidly. D. W. BARKER.

A. I always make a square shoulder at the cervical margin of the cavity, and where the tooth is thick enough, tie across cutting edge; if not, I use gold screws and build the filling around them.

B. Most emphatically a heavy blow. JOHN L. FOX.

A. I get retaining points or anchorage at the cervical border and put in post, as seen in drawing.*

B. I prefer light blows, except in building out, and then I want a good, solid blow from the start, and kept up till finished. A. E. BROWN.

A. I would devitalize the tooth, if it is not already dead, and fill around a solid gold pin, in the centre of the tooth, made solid by cementing.

B. It depends on the filling: Thin, frail edges, light blows; thick, strong edges, heavy blows. I use the automatic mallet exclusively. J. E. BREEDING.

A. If the nerve is alive and healthy, I get good retaining points in cervical and apical portions, and then use gold screws to assist in holding the filling.

B. With electric mallet, a light blow; with automatic, a heavy, short blow; hand mallet, with lead or composition surface, a medium blow.

A. J. BUTLER, D.D.S.

A. Excavate decay without encroaching on the pulp; cut good-sized pit and retaining points in basilar process; cut retaining grooves from cervical edge on labial and lingual sides toward cutting edge, labial larger at cervix; also, cut retaining point at cutting edge. As no two cases are alike, I use common sense on all. If the pulp is badly exposed, I should take it out and fill the pulp canal.

B. Usually medium. CHAS. R. CALKINS, D.D.S.

*The post is inserted near the coronal portion of the cavity, low enough down to obtain a good anchorage without impinging the nerve, and set at such an angle, that with proper length, the post reaches the extreme point or corner of filling when completed.—E. N. F.

A. Apply rubber dam, dry the tooth thoroughly, chisel the labial and palative edges till a firm basis is obtained, with no suspicion of weakness; excavate carefully, securing as much undercut as possible in the dentine, drill a retaining point near the cutting edge and two at cervical border—one of which is deep enough to hold firmly a gold screw. One needs have no fear of failure with judicious care from the foundation to completion.

G. A. ANDREWS, D.D.S.

A. If pulp is dead, remove decay, trim away frail edges, leaving them thick and beveled outwardly; fill root and anchor gold filling well up in pulp cavity. If the nerve is alive, prepare edges as before, make a retaining point at the upper extremity of the cavity, with a groove slightly undercut, extending from it to the portion of the cutting edge, which is still intact; anchor filling at retaining point and condense the whole foundation well.

B. I prefer a light blow of the mallet to start a filling, gradually increasing to not quite one-half of the full blow of the Snow & Lewis plugger, No. 4.

M. J. BARRETT, D.D.S.

A. If the nerve is safe and sufficiently protected by dentine, I grind with a diamond wheel to as smooth and as flat a surface as I can get, bevel the edges, drill three or four pits for anchorage at the most suitable points, then build up and contour to a finish. If decay extends beneath the edges so as to form a cavity, I take advantage of the cavity for anchorage and depend on the strength of the enamel. Should it be necessary to cap the nerve, you may expect a failure. If the nerve is involved and has to be destroyed, there is no difficulty—that question is mighty prolific, with many sides to it.

B. I prefer light blows.

CHAS. A. OTTERBEIN, D.D.S.

A. I should prefer a cavity as shown by first smoothing off the edges with fine polishing tape, and have the edge of enamel beveled so that the gold would overlap the whole circumference of the cavity; then make as deep a groove all around under the enamel, as deep as the case would practically allow for anchorage. Of course I am now considering a case where the pulp is alive; if dead, the case would be much more simple.

B. I always use the electric mallet, for such a case. I should not favor a heavy blow as it would be a delicate piece of work; with the electric mallet the tooth will not be sore when the operation is completed, and the gold will be perfectly condensed.

F. A. GREENE.

A. Cut down the tooth till good, strong, square edges are given, then cut out the cutting edge so as to leave no thin enamel; next form the cavity toward the gum to represent a true dovetail, making slight undercuts that will retain the foundation layer of some form of sponge gold. Use no retaining pits, for they are "A delusion and a snare."

B. I use an automatic mallet, and in the case given would use a medium blow—medium light at first, and after the edges of the tooth are safely passed, a medium heavy blow; always directing the blow toward the point of root of tooth, as the irritation from concussion is thus much less.

ABIEL BOWEN.

A. Assuming that the tooth is in a healthy condition, and pulp sufficiently protected. Remove disorganized dentine till sound structure is reached, trim the proximal edge of enamel sufficient to obtain the required strength, cut away cervical margin of cavity beyond contact with adjoining tooth; now in the dentine at the cervical margin, with a minim-wheel-bur, cut a deep groove terminating in a pit at either extremity; then in the dentine at the cutting edge, as near the terminus of the pulp chamber as is safe, make a deep pit extending two-thirds through the tooth structure and directed forward, using as large a bur as possible without weakening the tooth; then rotate the bur so as to produce an undercut in the posterior wall of

this pit; next cut a groove along the labial wall of the cavity uniting cervical groove with the pit at cutting edge. Do the same with palatal wall, only make the groove slight as the wall is weak in this position.

To fill:—Fill the pit carefully at the cutting edge first, using only hand-pressure, then, beginning at the cervical groove, fill in the ordinary way. In finishing, see that the occluding teeth do not come in contact with the filling.

B. BEMENT, D.D.S.

The above question as sent us was very indefinite. The condition of the pulp was not stated, and as the sender failed to sign his name we were obliged to send it out as received. All queries for this department should be signed with full name and address. Questions sent in for August will appear next month.

E. N. FRANCIS.

Separating Prosthetics from Operative Dentistry.

DR. G. H. WILSON, PLAINSVILLE, O.

THE eternal principle underlying the profession is the salvation of the natural organs. When we begin to add to, we enter the domain of prosthesis and who shall say where it shall stop?

We have a case presenting a carious incisor. We are not restricted, but permitted to express through our operation our highest ideal, if our manipulative ability will permit, of perfection.

A step farther. The same tooth, the crown is gone. We are permitted to go to the depots and select a ready made one and set it. Suppose the operator decides that the crown is not the best for the case (and rarely they are), but that one should be made. Shall he refuse to do the work because it is dirty and unprofessional?

A step farther. The root has been extracted and the patient must have the tooth replaced. You either do not believe in implantation or do not think it a suitable case. You say, "Madam, the profession has done all it can for you; you will be obliged to go to Mr. Blank, around the corner, and have him make you a false tooth." Your lady looks at you, and you see her confidence in your ability vanish, as the expression of mortification develops. She implores you not to abandon her to such a fate. She informs you that she will never be able to smile again, for she can never endure to have that false tooth show. "He will be sure to have it off color, misshaped, or something, so every one will know it. And then, that horrid plate over the roof of my mouth. Oh, I could never endure that great gold tooth, or that unsightly band." You assure her that her fears are without foundation, that Mr. Blank is a very fine workman, and that he has fine taste and will do the work so that the sharpest eye cannot detect it.

What would be your mortification if your fine lady should say, "I thought Mr. Blank was only a mechanic. If he can take my case when you have done your utmost, and carry it to a complete success, is he not more of an artist than you?"

We make the assertion that the tendency of prosthetic dentistry is continually upward, and every dentist must do his part to make it so.

We need not go back farther than the establishment of the first dental college. In what condition was this department at that time? So limited in resources that only the wealthy could afford a substitute in case of a lost denture. The base was well enough, gold and silver, but the method of attaching the teeth! The teeth themselves! no exact knowledge of size, shading, contouring, temperament, age, etc.; the utter inability to arrange for proper occlusion and expression at the same time! The modes were so crude that when the section teeth were introduced they were greeted as a great advance, tho to-day the abomination of every artistic eye.

It is true the most artistic method (continuous gum) had its birth at about the same time as the least artistic (vulcanite).

When we consider the small portion of the profession who were imbued with professional and artistic ideas, and the ease of construction and the cheapness of the one material compared with the other, we do not wonder at the condition of affairs.

To-day we see the tide is turning, the dentist recognizes the truth, tho he may not be in a position to show his faith by his works. The mass of the profession are only waiting for the leader, when they will follow. While vulcanite is the least artistic, yet, because of the ease of manipulation and of its inexpensiveness, it is of great value in many operations; also to those who would be denied the benefits of the more desirable because of their financial inability to procure them.

The number who are ignoring the prosthetic department, the many good men who give so much attention to the different methods of bridge-work, none of which are simple compared with vulcanite, the recent introduction of the practitioners course in prosthesis, all demonstrate the demands of the times and the upward tendency of the department. If these courses are attended to any great extent by the recent graduate, it suggests that his *alma mater* has not done all it should for him and the necessity of longer time spent in the schools.

If the tendency to create a specialty within a specialty, and to confine ourselves to one department, is because the whole is too broad and expensive, why should we clamor for admission to another profession, with its multitudinous subjects and its current literature so extensive that, if added to our own, would engulf the busy practitioner.—*Ohio Journal*.

Laboratory Hints.

BY C. C. EVERTS, INDIANAPOLIS, IND.

ONE great trouble that beginners have in learning to solder is in melting the solder before the case is ready for it. The solder balls up just when we don't want it to, and persistently refuses to go where we do; then we blow, and blow, waste lots of good wind, still to no purpose. Then if we are some dentists (which it is to be hoped we are not) we may even launch a few strong, old-time "cuss words" at the solder, blow-pipe, and everything else but the thing to blame, namely, ourselves. Heat your case up thoroughly before you attempt to use the blow-pipe, and you will not have near so much blowing to do; in fact, a very little will suffice. I have had sheet iron rings of three sizes made at the tinnerns, with perforated bottoms set about an inch above the lower rim. I put my case in this ring, first having applied plenty of borax (don't be afraid to use borax), and the quantity of solder I think sufficient, I pack charcoal all around this, set it on my gas stove and let it heat. If you let it get hot enough a very little use of the blow-pipe will be necessary. The solder will flow nicely just where you want it; you will feel cool, calm, and pleasant toward every one, and could even keep your temper if a patient should come in and say her teeth (that you had made the week before) "felt like a lot of broken dishes in her mouth, and she couldn't chaw on 'em no way, not even soft vittals, let alone crackin' nuts."

I use Dr. Melotte's blow-pipe, which is very convenient and efficient; but remember it is not so much the blow-pipe on which the success of the operation depends. Another little contrivance I am using in the laboratory which I find fills a long felt want, is a bench block patented by Dr. Magnus. It is a soft rubber block held in an iron frame. The rubber offers a surface that clings to the teeth and holds the case firmly while filing, obviates the danger of fracture from the shiver of the file, and is noiseless. It also has a small polished anvil on the iron frame that is often very convenient. I know of nothing in the laboratory that "fills the bill" more completely.—*Ohio Journal Dental Science*.

Evolution in Dentistry.

DR. J. A. ROBINSON.

IF dentistry is to become a professional fact in the highest sense, a profession with the highest aims, it must become so through the laws of evolution. The first thing to be accepted and thoroughly understood is the law of physical evolution, for that is the base of spiritual evolution, and all the professions are based on that fact. There can be no profession without the love of our neighbor as ourselves, and that is the spiritual law, and physical evolution is the alphabet and the school-master to teach us, and show us the way. Mechanics and conscience are only the tools we use to carry forward these higher aims.

As the germ or the protoplasm is the starting point of all life, and that is endowed with the power of progress, so dentistry began with the doctor of medicine, and it is in perfect accord with the law of evolution that in the end the dentist should be the doctor of dental surgery. He came, in fact, from this common stem of cure, and he was not a typical representative, but a connecting link, of what was to become flower-bearing and fruit-bearing; a common trunk of the learned professions. The change has been as great, and the differentiation as marked, and the progress as certain, as that exhibited in our civilization between the log hut of the original backwoods settler who first came to this western wilderness and the palatial residence of the millionaire of to-day.

There are certain individuals who have advanced to the dignity of scientists and men of letters in our profession, and others who keep working on a level plane to the end of life. Go work in the vineyard is the law of the New Testament and the law of life, and not like Thoreau, who, when he had made what he considered a perfect lead pencil, threw away his tools and abandoned his shop, and refused to make another, but lived a nomadic life and communed with woodchucks, blue birds and sparrows.

The transmutation of rubber by vulcanization made as great a change in the practice of dentistry as there is in nature between the typical fishes and the true reptile, and the real practice in artificial dentures stood as widely apart as the reptile and the bird life. Good teeth, by the use of sulphuric ether in 1839 and 1840, were extracted by the bushel to make way for what was advertised to be the cure-all for those who had by neglect, or heredity, been victims of toothache or loss of teeth. So great was the mania for tooth extraction that offices were fitted up in Boston, where persons were employed for nothing else but extracting teeth with sulphuric ether "without pain," and the first vulcanizers that were made held two gallons of water, and had capacity for vulcanizing twenty sets of teeth at a single heating. Gilbert's air chamber, or central cavity came along about 1839 or 1840, and was made with a piece of hard leather the size and shape wanted; the leather was placed in a zinc model after the gold or silver plate had been swaged. This piece of leather was placed on the zinc die under the plate, the die and plate placed in the lead counter die, and struck with a heavy hammer sufficiently to produce a vacuum or depression that assisted greatly in holding the plate in place while talking or eating, and this little contrivance was the first invention in dental art that was patented. Between the years 1839 and 1842 was a remarkable epoch in the improvement of dental art; it was not confined to one thing, but a general uplifting or going forward, an evolution of the whole line of practice. Spooner had recommended arsenic combined with morphine to devitalize the pulps of the teeth, and Dr. S. P. Hullihen, of Wheeling, W. Va., had published his method of immediate filling where the pulp was exposed, and then by drilling a small hole through the alveolar process to meet the apex of the root for discharge of blood and prevent inflammation, and leave the tooth to get well by a natural process. I have no way of telling the exact data of this upward process, as I write entirely from memory of what took place fifty years ago. For in cases of acute inflammation and suppuration the remedies were very

few and simple, and consisted of lancing the gums above the offending tooth, and giving saponaceous pills made of soap, combined with aloes, as a stimulating purgative to change the secretions, and recommended patience and rest. This treatment was recommended after the pivot-teeth had been inserted on a wooden dowl, to prevent taking cold, and having a swollen face. We had not learnt to stop the foramen of the tooth to prevent the air being forced through to create inflammation and produce a swollen face, but laid all the trouble to "taking cold" during the operation. Dr. Hullihen also recommended drastic cathartic pills after the operation, and then drilling a small hole to meet the foramen in immediate tooth-filling. For hemorrhage after tooth extraction we used a small vial cork, to cork the opening as we would do with a small bottle. These were simple natural remedies, and were suggested like all remedies—the difficulties suggested the remedies. I think this was before Monse's salts had been discovered for hemorrhage.

Not one of the least evidences of evolution in our profession is that of personal friendship; to find the contrast we must look back fifty years.

To those persons who have entered the profession through dental colleges there can be no adequate description of the feelings of envy and jealousy that existed between good dentists at that time. Every dental office was a sealed enclosure. There was no bow of recognition or hand-shaking on the street, and if a dentist entered the office of any other dentist, he was met at the door with a look of "What do you want here?" that forbade his calling a second time. The dentist had only reached the productive and reproductive and muscular stages of development in professional life, and personal friendships were separated as widely as the combination and non-combination dealers, or the mollusks from the vertebrates. Even as late as 1853, when I first came to Cleveland and suggested forming a city society, in canvassing around among the select few who were more intimate as to whom we should invite, some dentist would ask, "Shall you invite Old Hog-eye?" alluding to one who had a defect in one of his eyes; and another would remark, "I hope you will not let that Irishman come in;" and another would say, "We don't want anything to do with old Wright."

Dr. Wright was working hard to introduce porcelain plates; and almost every dentist had some degrading nickname, that he was contemptuously called, and personal innuendoes about the neighboring dentists were far more frequent than is heard to-day.

Atkinson was at the meeting, and with his big heart he took them all in, and better feeling prevailed, and finally there was a general invitation to all the dentists in the city. I was particularly struck with the evolution of sentiment while attending a dental meeting in Buffalo, about two years ago, and then again in Cleveland, last October, at the Ohio State Society meeting. The second forenoon was devoted to eulogizing Dr. F. H. Rehwinkle, of Chillicothe; Dr. A. Berry and Dr. C. R. Taft, of Cincinnati, and Dr. R. L. Evans, of Toledo, former members of the State Society who had died during the past year. Prof. Taft was at his best in his oration on Dr. Rehwinkle, as being the truest in thought, the bravest in speech for justice and right; the pure soul of honor without a particle of dross throughout his whole intercourse of society and his family, and a serene faith in trusting our profession on its merits to take care of the future, as well as the present, by its intrinsic worth; that no act of his needed an apology, but his whole life, like pure truth, belonged to the present and to all time. When Dr. Harroon, of Toledo, rose to speak to the memory of Dr. C. R. Taft, of Cincinnati, the tears blinded up his large blue eyes till they fell down on his long gray beard, and, with choked utterances, he gave a loving tribute to the personal worth of a worthy worker in the profession; and Dr. H. A. Smith spoke with the tenderest feeling of the worth of those who had passed away during the year. It takes something more than professional etiquette to do this. Life is carried to higher and higher points till it gives the emotions of the heart which is the foundation of the Christian religion, and the cap-stone and seal of our common

brotherhood in all the professions. Self-esteem is healthful ; it strengthens character and helps to elevate society, but when our co-laborers are held in disesteem simply because they are in humble life, or cannot put on style, it is hateful and destroys that brotherly love which is the bond of professional life.

While in Cleveland, in 1854, I had a patient from an adjoining town call at my office to have some teeth filled. On examination, I found the most perfect fillings in his mouth I had ever seen. I called my brother's attention to the work, and learned it was done by Corydon Palmer, of Warren, Ohio. I said to my brother, "This work has taken all the conceit out of me. I must see this Corydon Palmer. I thought I was the best operator in the West, but I am not." So the next Saturday I took the train and went to spend Sunday with Palmer. I found him a very unpretentious person, but thoroughly in love with his profession. We talked all night and all next day, Sunday, and I came home saying I had found the best dentist I had ever seen, in an obscure town in Ohio, who was so modest and so unpretending that he did not know himself how much he knew or how well he could work. Shortly after, with repeated invitations, he came and made me a visit of three or four days. We made instruments and talked all sorts of things that ought to be done among the dentists, and had a real love-feast. That was the beginning of a pleasant, lasting and confiding friendship.—*Dental Register*.

The Proper Period for Regulation of the Teeth.

DR. E. S. TALBOT, IN HIS "IRREGULARITIES OF THE TEETH."

THE proper period at which to begin operative interference in irregularity of the teeth is of paramount importance, if we desire to obtain good results ; but in deciding the question the following conditions must be considered :

1st. The character of the deformity, the age, health and sex of the patient.

2d. Many irregularities are so slight that, if uninterfered with, nature will, in the majority of instances, accomplish much better results than the ill-advised efforts of the dentist, *e. g.*, the cuspids and incisors quite frequently erupt out of their position, but gradually find their proper places.

3d. Moderate asymmetry has been produced by some imperfect or irregularly erupted tooth, which, being of slight importance in itself, may with propriety be removed. This conservatism is often attended by results as good as could be desired. If, therefore, the teeth are carefully watched by a competent dentist from the time of their eruption till they are fully developed, the necessity of operations for the correction of irregularities in later life is reduced to a minimum.

4th. As illustrative. If an anterior upper superior incisor exhibits a tendency to occlude posteriorly to the cutting edges of the inferior teeth, this may be easily corrected as soon as it appears through the gum. We may thus in a simple manner correct deformities which, if neglected, would later require the best of knowledge and mechanical skill and no end of trouble to remove. Aside from this simple abnormality, however, irregularities of the incisors had better be let alone till after the cuspids have erupted.

In fact, if any of the teeth posterior to the lateral incisors are involved, even in the simple deformity just mentioned, it is wise to defer interference till after both the cuspids and bicuspid have erupted. Their relative positions can thus be studied, and with a single operation their symmetry can be restored. Occasionally, perhaps, an earlier operation would be advisable, but generally not.

No arbitrary rule as to the precise time for interference can be safely given. On the average, however, it may be said proximately, the best time for interference is generally from the twelfth to the fourteenth year. At this time, the transitional period between childhood and puberty, all of the teeth are erupted, general nutrition is most active, the osseous system is in the constructive stage, and the formative process is in vigorous operation. At this time, also, the roots of the teeth are

not fully developed, but are somewhat loosely confined within the alveoli, and the apical foramina are large, thus lessening the liability of impairment of the blood supply and consequent destruction of the pulp.

The conditions mentioned as existing at the twelfth to the fourteenth year being coincident with the completion of the eruption of the teeth, it follows that the reverse holds true; hence, when the teeth are fully erupted, we may proceed to operate irrespective of the age of the patient.

The probability of a satisfactory result in regulating decreases yearly after the age of puberty, and after the age of twenty-six the chances of a satisfactory result are meagre; for at this time the entire osseous system is developed, and there is little probability of extensive deposit of ossific material. It is possible to regulate deformities even as late as the thirtieth year, but the resulting pain is so severe, and the mechanical force necessary to produce absorption of the obstructive portions of the alveoli is so great, that the end hardly justifies the means. When regulated so late in life, retentive and corrective plates must be worn for years to hold the teeth in place till ossific material shall have formed to retain them in their new position.

Sometimes in late correction, absorption of the alveolar process not being followed by compensatory ossific deposit, the mechanical interference produces chronic inflammation of the peridental membrane, *i. e.*, a veritable pyorrhea alveolaris. I observed this condition in the mouth of a lady of thirty-five, in whom an extended and ill-advised operation had been performed. If the teeth must be regulated at this period of life, the operation should be conducted with great caution and the patient should be impressed with a doubtful prognosis. When the patient insists on an attempt at regulation, and is willing to assume the responsibility of failure, we are, perhaps, justified in operating in any case of reasonable age.

The general health and constitutional peculiarities of the patient are important. Inasmuch as the majority of the cases for regulation are youthful, the general health is no slight consideration. It is unfortunate that the most favorable period for operation is one of the most critical in the life of the patient, so far as the general health is concerned.

From the age of twelve to sixteen the rapidly-growing boy or girl is subjected to many physical changes, entailing profound disturbances of the general and trophic nervous systems. Prolonged and injudicious hours of study, over-exertion, bad air, improper or insufficient food, sexual irritation, and many other disturbing elements, are apt to become prominent factors in the daily life of the patient.

Sexual disturbance is of especial importance in females, on account of the new function—menstruation—which asserts itself at this period. When we superadd to these physiological perturbations and circumstances of environment, the perversion of nutrition consequent on congenital weakness, rachitis, hereditary syphilis or the exanthemata, the important bearing of the condition of the general health on our operative procedures is very manifest. We should defer operating, therefore, on young persons in delicate health till they have become improved by proper treatment; and it behooves us as scientific dentists to know something of these general conditions, so that we may, in all conscientiousness, place them in proper hands for constitutional treatment. It is in just such cases as these described that the coöperation of a skilful physician is indispensable. A case was recently noted in this city where, from a prolonged operation in regulating, a delicate, puny lady was invalided for two years, solely by the shock produced on a nervous system primarily unstable.

PHYSIOLOGICAL, AND PATHOLOGICAL CHANGES.

It is apparent, to a close observer, that the teeth are constantly changing their positions in the jaw, absorption and deposition of bone going on simultaneously and continuously. This is particularly noticeable at the first eruption of the teeth, and again from the twelfth to the sixteenth year. When the first permanent molar has been removed, the second and third gradually press forward and fill the space.

It will also be noticed that teeth erupted out of their position will, in time, often find their way into their proper places; also, when the molars and bicuspid are lost late in life, the anterior teeth are forced forward, thus causing the alveolar arches to project. Again, it is found that when the anterior teeth come in irregularly they rotate their way into place. These facts indicate that when nature is assisted, whether by mechanical devices or the removal of obstructions, the regulation of malpositions becomes both simple and logical; and, furthermore, that after regulation the teeth may be firmly retained in their relatively new positions in the alveolar process.

The application of light, constant pressure to irregular teeth, in connection with nature's own efforts, will greatly enhance the physiological phenomena of absorption and reproduction of bone. Whether these phenomena will proceed equally will depend on the amount of pressure exerted and the condition of the individual, for it is obvious that in cachexie of various kinds disintegration is favored, while tissue-building is correspondingly sluggish. This will serve to impress the immediately vital importance of the degree of pressure and the constitutional condition of the patient in various operations of regulating. When the whole of the alveolar arch is spread laterally, and the force is distributed for a distance on both sides of the jaw, the bones yield to an extent, thus spacing the teeth equally in all directions; and by absorption of the old and deposition of the new bone about them, they become fixt in their new positions. The degree of absorption and change of position is not always equal in all parts of the same tooth, varying chiefly with the direction of the pressure.

When force is applied to the crown, and the tooth has to be moved considerably, there is more absorption at the margin of the alveolus than at the apex. Simple leverage will explain this: the mechanical appliance is the power, and the apex of the tooth is the fulcrum; the power acts on the margin of the cavity in which the tooth is imbedded. Or, it might be said, the tooth moves like a spoke in a wheel: the outer part of the crown travels a relatively greater distance than the inner part, or apex. The gradual diminution in diameter from neck to apex is also an important consideration.

When the pressure is too great, then absorption is arrested, on account of the inflammation and pain which result. The operator should avoid causing pain, and this is usually possible. When pain does occur it should warn him that the line of demarkation between physiological and pathological changes is being transgressed by mechanical violence. If the pressure be gentle, evenly distributed and constant, no pain will be experienced after the teeth have once begun to yield in the proper direction. But when the force is applied, removed, and reapplied at spasmodic intervals, considerable pain must necessarily result.

The difference between the effects of steady and those of intermittent pressure is illustrated in every-day practice: where teeth have been separated to facilitate the filling of proximate cavities, the vibration of the teeth caused by preparing the cavity and applying the gold produces intense pain, which is relieved by inserting a wedge to distend and steady the teeth by its constant and equable pressure. Individual susceptibility must not be forgotten in this connection; for, as is well known, the impressibility to pain and the power of endurance vary with the temperament and condition of the patient. After the age of twenty-five or six the bones contain more of the earthly and less of the animal matter than during the formative and developmental period, and the constructive stage having passed, it becomes more difficult to move the teeth than in earlier life; and, with the increased pressure required to effect absorption, a greater degree of pain and inflammation is produced.

In these, retentive plates must often be worn for two or three years after the malposition of the teeth has been corrected, till a deposition of bone takes places which is sufficiently firm to hold the teeth securely in place. The teeth most difficult to retain are those that have been rotated in the jaw, as they have a tendency

to return to their original and faulty positions even after a lapse of three years. By dispensing with the retentive plate for a day or two, and then reinserting it, any deviation in position can be readily noted.

Extensive Removable Bridge-Work, and its Discussion in the New Jersey Society.

J. MARION EDMUNDS, D.D.S., NEW YORK CITY.

WHEN Dr. Bing, of Paris, conceived the idea of attaching one missing tooth to two remaining teeth, by soldering a piece of gold wire to the back of an artificial facing, and building it with gold foil into cavities, either natural or artificial, then the genius of the American dentist was called on to improve and advance this idea to a height so sublime that the original is lost in obscurity. Drs. Webb, Beers, Low, Starr, Evans and Brown have all contributed much to advance this new era in dentistry—Dr. Webb improving on Dr. Bing's method, Dr. Beers inventing the gold cap, Dr. Low soldering one or more facings to these gold caps, and forming what is known as the Low bridge. Dr. R. Walter Starr, of Philadelphia, to my mind made a decided improvement on the Low bridge when he invented the removable bridge, which had many advantages over all other kinds of bridge-work. My object has been since I commenced this new, beautiful and useful method of prosthesis, to extend its sphere of usefulness as far as possible, and to-day I have the pleasure to present to this society an original method which has given my patients and myself the most gratifying results.

As the esthetic prosthesis is the standard "*par excellence*," all factors in the process must work to this end. The size and color of the teeth should correspond with the age and temperament of the patient; the material used as a base in the construction should be as near the color of the natural tissue as possible. Many contend that this can be done only in porcelain. This I will not dispute, but I have had excellent results with zylonite, or celluloid.

It is hardly necessary in this paper to describe the preparation of a tooth or a cap. I will only say that it must be ground slightly conical from the free margin of the gum to the articulating surface, and a ferrule, or band, made to fit closely around the neck of the tooth, barely under the free margin of the gum. As the soft tissues and membrane play an important part in the support of this process, they must be examined with care; and, before putting on a cap or inserting a bridge, any deviation from the normal should be treated with remedial agents till health is fully restored. The next step is to make another cap to telescope over the one already in place. Then take an impression of the tooth-space, and of a few of the teeth in front of the space that is to be filled. From this impression run a model, and cast a duplicate of zinc in sand; then run a counter-die and swage a narrow rim of gold plate to rest on the gum as a saddle. This must now be placed in position on the model, the outer cap waxt in place and soldered there. This accomplished, it may be placed in the mouth, the bite taken, the teeth waxt in position and articulated. The model should be scraped, so that the saddle may fit firmly on the gum. This is done to allow for the expansion of the plaster, otherwise there might be an injurious strain on the tooth supporting the bridge. If from absorption there should be a deficiency or falling in of the buccal walls, the natural expression can be restored by carrying the gold plate well up on the buccal walls of the alveolar ridge, adding wax where the deficiency has occurred. The most extensive case that can be or has been inserted is a full upper or lower denture, attached to two teeth. When we consider the advantages that such operations afford, we shall no doubt fully agree that this is the most valuable method of replacement we have. The superior vault of the oral cavity should be covered by an artificial plate, and certainly not by a non-conducting one. The pathological conditions of the soft tissues and mucous membrane that are almost always present in the mouth of patients wearing rubber dentures will certainly go far to substantiate this statement.

The advantages of having merely a gold rim held firmly in contact with the gums, covering only the alveolar ridge, held there by the laws of adhesion and mechanical force, and removable at the will of the patient, are obvious. Counter-sunk teeth are invariably the best substitute, resembling, as they do, the natural organs, and affording the patient a more perfect enunciation and articulation than can be obtained in any other way. I have inserted two full upper dentures, which are giving perfect satisfaction. My first was that of a lady who had been wearing for ten years a full upper plate, with the exception of two upper third molars. The alveolar ridge around these was almost completely destroyed. I could pass a probe from the margin of the gum to at least three-fourths the length of the root. The teeth were so loose that it seemed absurd to think of saving them. The tissue of the entire arch was also badly inflamed. This plate did not fit the arch or articulate with a single tooth. The lower teeth, eight of which were in the anterior part of the inferior arch, were allowed to occlude on the plate three-eighths of an inch posterior to the corresponding upper teeth. There was a strip of gold vulcanized on the plate to prevent the lower teeth wearing through the rubber. You can well imagine what a severe expression the shortening of the bite gave, adding to this the extension of the upper teeth and lips in the manner previously stated. I have seen few worse caused by freaks of nature. After considerable persuasion on the part of the patient to save the two remaining molars, and insert a bridge, if possible, I decided to try. Removing the tartar and *débris* thoroughly, I used aromatic sulphuric acid, half strength, on pledgets of cotton, packing them as close to the walls of the socket as I could, and allowing them to remain for two hours at a time. This treatment was continued for a week. Then, after scarifying the tissue with a small bur, treatment was continued for a week longer, with injections of peroxide of hydrogen and iodide of zinc. By this time healthy granulations had appeared, and the teeth were firmly set. I then prepared the teeth and capt them, and in one more week inserted a full bridge, constructed as previously described. This case has been in the mouth thirteen months, the patient wearing it with great comfort, whilst the remaining teeth are nearly firm, notwithstanding they support a full denture.

DISCUSSION.

Dr. E. Parmly Brown.—His paper is all right ; I cannot take any exceptions to it. I have not tried rubber nor celluloid for bridges. Rubber is good for some purposes. A removable bridge, one that may be removed, but does not move when it is not wanted to be removed, must be a grand thing. The majority of the bridges made to-day are removable long before you wish them to be. As they told me over in England, most of them were “‘anging haround hon one ‘inge” in a few weeks. But that is not saying bridge-work is no good. If one of your fillings should happen to come out, you would not say, “I will never insert another filling ; fillings are no good.”

Dr. Stockton.—I have seen a great many fixt bridges, and my impression is they are a nuisance to the patients and to those who come in contact with them, and that they sooner or later cause loss of the teeth to which they are attached. If bridges can be made removable, it seems to me that would be a much better way of putting them on. The only question in my mind is whether the constant taking out of the bridge for cleansing purposes would not cause loosening of the capt teeth. I have not seen removable bridges in use long enough to determine that question. But I am satisfied that bridges are so fastened that they cannot be removed from the mouth by the patient are not a good thing ; and if we must wear an artificial substitute of some kind I would much prefer a good gold plate to a fixt bridge that could not be taken out and cleansed. Our mouths are dirty enough anyhow, the best of us ; the mouths that come to us are oftentimes anything but sweet and pleasant ; and if we place in them an artificial denture that cannot be removed and cleansed, it will surely prove to be a nuisance.

Dr. Edmunds.—After wearing a fixt bridge in my mouth for five years, I found

that tho there were only a few teeth attached, it was almost impossible to keep the piece clean. It occurred to me to make a removable bridge; and after several experiments I made one which is held perfectly in place, without rubbing the teeth it is attached to.

When I spoke of making the capt tooth conical from the margin of the gum, I did not mean I made it completely so; it is rather flattened on the anterior and posterior surfaces, which prevents the bridge from being twisted around in the mouth. There is no additional strain on the teeth that support the bridge, because the bridge rests on the gum, and the force of the other jaw comes on the gum.

Dr. Pinney.—I have been unfortunate enough to lose a tooth or two, making it necessary to bridge over that space. At one time I had what I thought was the very finest thing out, a removable bridge, but it soon started the tooth to which it was attached, and wiggled it out. It was the work of one of the best workmen perhaps in the country. After that I had a permanent bridge made, and it is one of the most beautiful things I have ever seen. It is a great deal more cleanly than the other was. I could not keep the removable bridge clean, and it would shift about and bother me all the time. I was happy when the tooth came out and I could throw the thing away. The permanent bridge is a great satisfaction to me. I do not think I have ever seen a removable bridge that was worth anything. You cannot keep it tight. It wiggles a great deal, and finally the tooth comes out, or something is wrong about it. The permanent bridge stays in place without any trouble.

Dr. Traux.—This subject of bridge-work is like the old one of filling teeth. Some will use nothing but gold, and others tell us nothing but amalgam should be used; some prefer gutta-percha, and others like a combination. After all, the question reduces itself to the filling of teeth with judgment in each individual case. The removable bridge has its advantages. The advantage of the removable bridge is that it can be taken out and cleansed. I think we should learn to discriminate between them, and to use the right one in the right place, making our work an individual operation in each case, which will insure higher results and the greatest good to patients.

Dr. Edmunds.—In reply to Dr. Pinney, I shall be happy at some meeting of the District Society of New Jersey, to produce a patient for whom I have inserted one of these bridges, and I think an examination of the work will convince every one that a removable bridge, of any dimension, can be kept perfectly clean, and will not wiggle about in the mouth as Dr. Pinney describes. It can be kept cleaner and better than immovable bridge-work.

Dr. Stockton.—This is an interesting question, the comparative merits of removable and immovable bridges. We have with us Dr. Waters, who presented to the profession a removable bridge; he has had large experience, and I think you would all be very glad to hear him on this question.

Dr. Waters.—My experience has been that removable bridge-work is, in my hands, much preferable to fixt bridge-work; it has been more satisfactory to my patients and to myself. I have constructed both kinds in the mouths of patients whom I knew to be cleanly, and my experience has led me to make removable bridges wherever it is practicable. We cannot always make a practical piece of removable bridge-work, nor can we make a thoroughly practicable piece of fixt bridge-work in all cases. We must exercise our judgment as to which is adapted to the particular case on hand. I have had several pieces of removable bridge-work in the mouths of my patients for some years. Dr. Brown has seen one piece after it was worn a considerable time. I received a letter in June from a young man who had been wearing for two years a removable bridge which I made for him, saying he had had the misfortune to have it broken. While he was cleaning the piece a young man, seeing some disturbance on the street, ran by and knocked it out of his hand and put his foot on it, and disfigured it very much. He was much distressed, as he was anxious to go to the Georgia State dental meeting, and wanted to exhibit

that piece of work. He sent me the wreck, together with an impression, model, and articulation. In about a week from the time he sent it to me he again had the piece in his mouth, and he wrote me that it was as satisfactory as the former piece. I made it without seeing the patient. A strong point in favor of removable bridge-work is that a patient at a distance can send an impression and model to you and have a new piece made without having to visit you personally; and in case of any accident to the teeth by which it is supported the piece can be removed and the teeth treated. With fixt bridge-work, in case of any accident, the entire piece must be removed, which requires considerable time and work. One of the patients I spoke of as being very cleanly had the misfortune to break a piece of fixt bridge-work in trying to remove it. I afterward put in his mouth a piece of removable bridge-work, since which I have had no trouble with it, nor has he.

One feature of Dr. Brown's method is much in its favor; that is the porcelain. I have found, where gold is exposed in the mouth, it is very difficult to keep it clean, but with porcelain there is not much difficulty. I have not seen any of his cases.

I do not know that I can say anything more, except that in my hands removable bridge-work, constructed with judgment, is preferable to fixt bridge-work. Removable bridge-work is certainly an improvement over the old clasp method.

In the case I spoke of, the young man wears a molar, cuspid, and bicuspid, supported by a molar and bicuspid, and those teeth are as firm now as they were when they were capt. He wrote me that after the bridge had been off for about a week the supporting teeth got a little tender, but after the piece was put back in place they felt all right. Whether taking a bridge out two or three times a day to cleanse it would tend to loosen a supporting tooth in course of time remains to be seen. I have one case that has been worn for three years, and the teeth are in perfect condition and the whole work satisfactory.

Dr. Pinney.—I would like to asked Dr. Waters and Dr. Edmunds how long it will take the saliva, or the acids of the mouth, to become putrid around those caps. It takes but a short time; and I have yet to remove a bridge or cap, or anything of that kind that had been worn a few hours, that was not offensive. You cannot make the caps so tight as to exclude the fluids of the mouth, and in an hour or two they are rancid. I think the case of Dr. Waters, which was sent a long distance to be repaired, is not a great triumph over fixt bridge-work.

Dr. Edmunds.—The caps can be made absolutely air-tight, and the saliva will not accumulate under the cap over which it is telescoped, if made in the way I have suggested.

Dr. Rhein.—I suppose the best of us are too wont to go ahead and do operations too quickly, without judging the best method to be followed in each case. And we are, of course, somewhat excusable, because our time is valuable, and many of our patients are hardly willing to pay for time taken in reflection; but that is where most of the errors are made in doing anything that is not a simple operation. We do not take into consideration whether this thing would be better than that, or some other operation better than either. If we were to do that, we should generally reach a conclusion that would not afterward be found to be a failure.

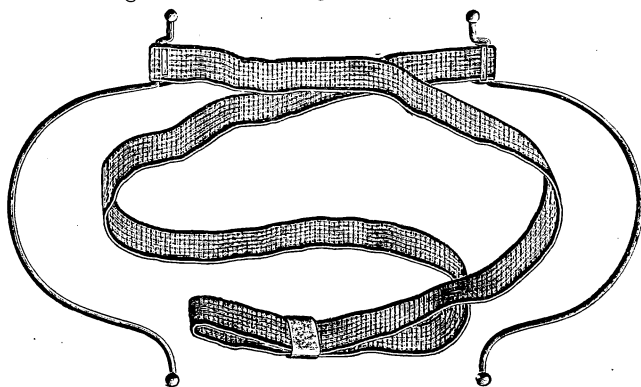
The point I want to raise is the question of the possibility of keeping fixt bridges in a cleanly condition. I have seen many fixt bridges in a filthy condition; and I have seen others in as cleanly condition as most patients keep their natural teeth; and the impression I have gained has been that in every case where the operator has endeavored to make a cleansing space under the fixt bridge he has made a place for the accumulation of filth and *débris*, sooner or later. Even where a decided cleansing space has been left, the soft tissues will, in course of time, close up that space just sufficiently to make it exactly the opposite of what it was intended to be. I believe the only successful cases of fixt bridge-work I have seen have been those in which the bridge impinged so tightly on the soft tissues as literally to embed itself in them. That is the method I have always used.

Dr. Waters has expressed the opinion that porcelain is much more cleanly than gold, and I think he is quite correct in that, but the gold fastenings of porcelain bridges to the natural teeth is an objection. It is no more a bar against porcelain bridge-work, if it is perfectly adapted to the tissues and imbedded in the gum, than a gold filling in a natural tooth.

Dr. Waters presented some splendid arguments in favor of removable bridge-work. It is a splendid piece of work; better than any plate, or anything else, except a piece of good porcelain bridge-work, permanently fixt, and resting so firmly on the gum as to smother bacteria to death. That is what you really want, and what will do you good.

Dr. Carroll.—While I am a practitioner of the old school, and somewhat fixt in methods of work, I agree with Dr. Rhein as to thorough eclecticism in the use of bridge-work. The man who undertakes to pursue one form of bridge-work in all cases will have failures. I have adopted a special form of fixt bridge, made by capping the abutment roots or teeth, and then telescoping over them, resting the bridge not only on the abutments, but firmly on the gum as well. Theoretically that is not a good form of bridge-work. Practically it is *the* form of bridge-work, to my mind, to-day, and the only form that is going to stand in all cases. Theoretically it is not a good form, for it is a saddle or plate resting on the gums, and therefore might become foul. I adopted that form very reluctantly. During the past eighteen months I have put some thirty or forty different pieces of this kind in my patients' mouths, watching them very closely. The last case I observed was yesterday in my office, one of the most cleanly patients I have ever had in my practice. He had nothing back of the cuspid, but had the teeth in front of the cuspid. I saddled the lateral and the cuspid on one side, and the cuspid and bicuspid on the other side—the most unfavorable form for a fixt bridge. They were aluminium bridges. When cemented in place on the teeth they rested firmly on the gums, and, having a good occlusion below, he had excellent use of it as a mill with which to grind. I have seen the patient many times since it was inserted, and he says there is no uncleanness whatever. In my own mouth I have a fixt bridge not of the kind indicated; it is Richmond's, and I have a constant sense that it is not a cleanly piece of work. It was made by one of the best workers in America. On the other side I have a removable bridge, which I can keep pretty clean by removing and cleaning it. The result of my observation in over fifty cases of bridge-work is that the fixt form is the best, when resting not on the teeth alone, but on the alveolus as well.

Elliott's Rubber Dam Holder is a great improvement on those that have preceded it. The following illustration will give a better description than words.



A still better appreciation of this unique contrivance will be had by its adoption in practice.

Pyorrhea Alveolaris, and Discussion in the New Jersey Society.

GEORGE S. ALLAN, D.D.S., NEW YORK CITY.

IT seems very strange to many who have given attention to the subject, and have such cases as we are to consider constantly before them, how little the profession in general is interested in them, and how universally they are put to one side,—neglected or avoided altogether. Nine cases out of ten, at least, that come into my hands have the same story to tell of how they had thought a cure, or even a relief, was impossible, for their dentists have told them “there was no hope; the trouble being constitutional, in their blood, and nothing could be done.” More professional crimes are committed in this department of our practice than in any other I know of, for I hold it is a crime for a dentist, to whose professional skill and care a patient commits himself, to offer him ignorance where he expects knowledge, and mislead him as to his chances and opportunities for a cure. Still less is it excusable for a dentist to allow, in any case, his patient to acquire the disease while he is in his care. If my views are well founded, its beginnings are always capable of being easily detected and as easily warded off. I would be heartily ashamed of myself if patients of mine acquired it while in my charge, unless it was through such neglect on their part as would make my directions and work on their teeth useless for warding it off. I cannot lay too great stress on this point, and repeat my assertion that the blame rests on the dentist in all such cases.

I have taken some pains to accumulate statistics as to the relative numbers and importance of the teeth lost in this way as compared with those lost by decay. Of course, they are incomplete and only relatively valuable, still they are impressive, and should wake us up to the importance of the subject and of our duty in studying it in all its phases. I will give you the net results only of my investigations. 1st. The actual number of teeth lost by pyorrhea alveolaris approximates, if it does not reach, the number lost by decay. 2d. The molars and bicuspid are affected by it, as compared with the front teeth, in the proportion of two or three to one. 3d. Middle and old age are specially liable to it, and hardly at all to decay.

As to the difficulties attending treatment. In its earlier stages success is as certain as in that of decay, and generally as lasting. In its later stages it is more difficult and far from as promising in good results. The difference is the same in degree that a builder would have in saving a house from destruction whose foundation was gone or badly impaired, or only some of the upper stories out of order.

As I propose, as before intimated, to consider the subject from a personal standpoint, and give you only such thoughts and ideas as naturally present themselves from my own experience, it may be well here to outline, in brief, what I consider to be the characteristics or salient features of the disease, so that you may the more easily recognize it. For convenience' sake I will group the symptoms under two headings,—the manifest and the obscure. Under the first heading will belong those that the patient takes painful cognizance of, and most frequently brings him to your chair; and under the second, those which it requires the educated eye and touch of the dentist to detect and point out. The former belong to the later stages of the disease, the latter to the earlier.

First and most prominent of the former symptoms is the loosening of the teeth. This is generally accompanied by a recession of the gums. It may come on gradually and unaccompanied by pain, or it may make most rapid progress and cause soreness and inconvenience. A careless patient would have his attention first drawn to the trouble by noticing that some teeth felt lame or were tender to the touch, or when eating, but at other times were quiet. Then, on placing one of his fingers on the offending member, he would find it had lost some of its firmness and was shaky at its socket.

When, as frequently happens, recession of the gums is the most prominent feature, it will be noticed that on one face of the tooth the root is improperly

exposed, the gum having disappeared, but the tooth need not of necessity feel loose, being held in place by healthy tissues on the remaining portions, and may be still further steadied by its neighbors on each side. This we would call a second symptom, and a third symptom appears in a softened, tumefied gum, one that bleeds easily and has a dark purplish color. A fourth symptom would be a bad breath and a disagreeable taste in the mouth. A slight discharge of pus from around the affected teeth might account for this taste and odor, but not of necessity. All these symptoms may occur simultaneously, or any two of them may exist without the third. They all belong to the final stages of the trouble, and precede, without treatment, a limited time only the final loss of the teeth affected. It will be noticed I only allude to a discharge of pus as a probable incident manifesting itself in the later stages, for I feel it is not a prominent indication to go by. The dentist who looks for it as an aid in his diagnosis, will often look in vain, and still the disease may be making rapid progress. The presence of pus comes only as a sequence to an active inflammation, and can be counted on only as one of its signs and indications. It does not represent the disease any more than the interest on a debt represents its principal or what it was for.

In the second class of symptoms, those that require both skill and knowledge to discover, belong a much larger group of symptoms, and really the most important for us to consider; for they lie at the very basis of proper diagnosis and treatment, and as prevention is more valuable than either of these, their due consideration is most important. Just here I may say that the terms symptoms and causes seem to run together, and it is hard to decide where the one begins and the other ends. But, for our purpose, we need not be too particular in the use of words so long as they properly indicate our thoughts, and so if I call a symptom that which appears to any of you a cause, my explanation will be all-sufficient to satisfy your scruples.

To the second group of symptoms or indications belong the following: 1st. The gum over the affected tooth will have a slightly darker color than is natural, and, may be, will have fallen slightly away from the root. 2d. The instrument can be passed up between the gum and teeth beyond the normal distance, which is about one-sixteenth or one-eighth of an inch. 3d. The depth will vary at different points more than it ought to. 4th. The border of the alveolar process will be felt by an exploring instrument at some points. 5th. The neck of the tooth will be unusually sensitive, showing the presence of some irritating agent. 6th. The neck of the tooth will be rough and uneven under the margin of the gum. 7th. A whitish, milky exudation can be pressed from between the gum and the tooth, not at all, however, like pus or simulating it in color and consistency.

To sum them up, a close examination will reveal departures from the normal, healthy condition of the parts under consideration, slight and of apparently little import, but all having a direct and positive bearing on the future health and safety of the tooth. It is well to give special thought to first causes and to be careful, in treating symptoms, to consider them in their natural order and sequence. A neglect in these particulars may lead to grave errors in judgment, and still graver in treatment. Physicians see this now clearly, and ever-increasing thought is being given to make their practice as scientific as possible, by considering first of all the etiology of the diseases they are called on to treat. They recognize that treatment of disease must be empirical, unless based on a clear conception of its causes, and to-day medical literature teems with investigations and studies in this direction. So it must be with us in our specialty, and in that way only can we make our practice certain and sure.

A word, then, first, in reference to the etiology of pyorrhea alveolaris. To me it has always seemed that much of the trouble many dentists meet in their practice arises from a total misconception of its origin and cause; and, again, that this misconception is largely induced by our very ridiculous nomenclature. Anything more absurd from a pathological stand-point than this term "pyorrhea alveolaris" cannot well be imagined. The literal interpretation of the term is, "A discharge of

pus from the alveolar cavity." It is a beautiful example of putting the cart before the horse,—of naming a disease by one of its effects, and ignoring the causes of its inception. But this is a little folly that dentistry has borrowed from medicine. The full beauty of the term with us may be grasped when we consider, first, that generally the pus does not ooze from the alveolus at all; and, second, that the disease may and often does run its course without the formation of any pus whatever. Then, again, we find a genuine discharge of pus where it has its undoubted origin from another cause,—from an alveolar abscess, where the discharge takes place from some point around the neck of the tooth. In such our nomenclature would be perfect and indicative of the disease; it would be genuine pyorrhea alveolaris, and yet no one for a moment would be misled and call it by that name. The name, then, would seem to offer a good excuse for some blunderings in practice, as many, indeed, as the different ideas that dentists might hold of the nature of the enemy they were expected to tackle, whose name was only a cloak with which to hide his form and power. The first step, then, I would advise any one to take would be to discard the misleading term entirely; throw it out of his vocabulary, and to approach the subject from the direction of close observation of facts and conditions as he finds them in the mouths of his patients. Without being able to suggest a short, comprehensive title, one handy for use in conversation, I would group all these lesions under the heading of *affections of the periodontal membrane, having their origin at the neck of the tooth*.

At the June (1888) meeting of the Philadelphia Odontological Society, I made this assertion, for which I was strongly taken to task: "I desire to state positively my belief that pyorrhea alveolaris is always preceded by a deposit of serumal tartar." Now it is quite possible that this statement will have to be modified, not, however, to a very great extent. The essential principle or thought I wish to leave undisturbed. If I had said that as a rule the so-called pyorrhea alveolaris had its origin in a purely local cause, and that nine times out of ten this local cause was tartar in some of its portean forms, I would have rightly stated my opinion. If I had gone farther, and stated that the constitutional diathesis theory was only one way of begging the question and could not stand close examination, I would have still further enforced the same thought. For if I am convinced of any one thing thoroughly, it is that close observation will almost invariably detect the local irritant at the foundation of the trouble, and that treatment based on this theory assures more favorable results than any other with which I am acquainted. Given a primary local source of irritation, and there are many, some of which we will more especially refer to presently, and the rest follow in the natural order of cause and effect. The utmost that can be said for a systemtic origin for the disease is that the inflamed gingive or mucous membrane is prone to secrete—if that is the proper expression—lime salts, and that these lime salts, in turn, become an added cause of irritation and inflammation to the already affected soft tissues, more especially when they are deposited on the necks of the teeth and below the free margins of the gums. Of course, all will naturally draw a sharp line of distinction between ordinary salivary tartar which is deposited in thick masses on the lingual faces of the lower front teeth or buccal faces of the upper molars, and is seldom or never of itself the cause of pyorrhea alveolaris, and the various forms of black and brown tartar that creep under the gums and up on the roots of the teeth. The first mechanically pushes the gums back or lengthwise down the roots of the teeth, but does not insinuate itself between the gums and the roots of the teeth. It is only a semi-solid, and is easily scaled away from the face of the tooth, and, when removed, the soft tissues are found to have been but little affected by its presence; they may bleed a trifle, but practically are in a healthy condition, and soon recover any little loss of tone, once freed from the superincumbent mass. The deposition of this form of tartar may safely be said to be constitutional in that it is not necessarily, or even commonly, preceded by any local inflammation to induce it; but it is not especially dangerous, except through

gross neglect, and, as an exciting cause for the disease we are considering, it is hardly worth mentioning.

But the black or brown tartar is of another character,—serumic tartar, as Professor Black calls it,—and the name is a good one, as clearly indicative of its origin. It is an exudate from the inner surface of the gingivæ where they hung the neck of the tooth, an abnormal deposit from the mucous glands in that locality when they are in an irritated or inflamed condition. The physical appearances of this form of tartar vary considerably; but I cannot occupy your time by indicating all of them, the more so as they will naturally suggest themselves to you without such effort on my part. Generally, it is invisible to the eye, except when, having been present for some time, the overlying gum has been destroyed, and so exposes it. It is, therefore, not found on any portion of the crowns of the teeth, the reverse of the case of salivary tartar. For brevity's sake, I will draw your attention to two conditions only. First, when it is found in a comparatively thick mass lying under the free margin of the gum and longitudinally with the neck of the tooth; and, second, where it takes the form of thin, scaly patches, having a smooth, hard surface, and clinging most tenaciously to the tooth. The first form is rather the most common of the two, is more easily detected, and, as it does not cling so closely to the tooth, is the most easily removed. The latter—the one having the thin scaly character—I consider by far the most dangerous. It is the most insidious in its nature, and its first effects are slight and insignificant, and easily overlooked. Being smooth and hard, it does not irritate the soft tissues, and consequently there are no outside physical manifestations of its presence till its work of destruction is nearly complete. A delicate touch is not enough to prove its existence, for no touch is delicate enough to tell where the root is coated with it and where it is not, so thin is it, so hard, and so like the root itself. As a rule, we can only surmise its presence by one sign only,—viz.: when a delicate instrument can be passed between the root and the gum beyond its natural depth, all other conditions being apparently normal. I would draw special attention to this form of tartar, and wish to take great pains to impress upon your minds the necessity of fully comprehending its dangerous nature and the extreme care required to diagnose its presence, for I am fully convinced it is frequently overlooked, and that such oversight leads to fatal errors in practice. It is to the failure to detect it that we hear so much about constitutional causes, and the consequent lame excuses for faulty treatment and unfavorable results. Of course, the dentist who does not see a local cause for a local trouble falls back on the body as a whole to explain away his difficulty and father his failures, and the unfortunate patient is made happy and comfortable with the ready explanation that he owes the loss of his teeth to a bad “constitutional diathesis,” and “that nothing can be done for it,” and he takes away his sound tooth, after it is extracted, showing only a little discoloration that may be on the roots, to prove the wisdom of his dentist and his unfortunate relations with an all-wise Providence. The medical doctor looks wise and a bit sad as, with a twinkle in one corner of his eye, he tells his patient he has malaria, and that he cannot hope for much, for his system is full of it, and the dentist in like manner folds his hands and says, “Poor fellow! It is constitutional, and I can do nothing for you. Hold on to them as long as you can, and then I will take them out and make you a nice gold plate with artificial teeth, and you will never know your loss. You don't know, my dear sir, what wonderful strides dental science has made in late years, and how skilfully I can make good your misfortune.” If dentist and patient would both take these poor discolored roots in their hands, and give them a careful examination, their eyes might be opened, and they might both exclaim, but with widely different thoughts and feelings, “Is it possible!” The dentist, with his excavator, would find that the discolored patch could be chipt off, thin as it was, and that the healthy root was immediately underneath, and the thought would suggest itself that a foreign body of that character, between the root and peridental membrane, was not conducive to the

health and comfort of his patient ; and if it had been removed in time, and in the mouth, and not out of it, might have prevented its loss, and have given him a better claim to the title, "a skilful practitioner." As to the thoughts that would worry the patient, it may well be deemed prudent to say as little as possible. The simple truth is the various troubles that teeth are heir to have no remote origin. They are so purely local, and so close to hand, it seems unpardonable to overlook them. Do not misunderstand me on this point. I fully appreciate the importance of having in mind systemic conditions and influences, and their direct and indirect bearings in diagnosis and treatment, and give full weight to it all, but I do not allow my mind for a moment to be withdrawn from the main fact, that I have to deal with a local disease produced by local causes, and that the state or condition of the system is only one factor to be considered, and not the immediate or direct one.

If the tartar deposit could be eliminated from the list of causes of the disease in question, the disease itself would practically disappear, so manifestly is it in the prime cause of the disease and so little have other causes to do with it. Nine-tenths, if not ninety-nine-hundredths, of the cases that present themselves are due to it. Still there are others to be considered, and we will briefly allude to them, but only in a general way. There may be grouped under the general heading of mechanical or chemical irritants, foreign to the oral cavity, and accidental in their presence. A plate unduly pressing on the neck of the tooth may be one cause ; a bristle from a tooth-brush or other foreign body lodged under the margin of the gum and pressing on the membrane, another ; putrefying food allowed to remain in contact with the tooth and generating some poisonous tomines which gain lodgment at the gingival border, another ; and so the list might be multiplied, but we will hasten on.

And now, for a moment, let us see if we cannot go a step farther back in seeking for the origin of the trouble. Is there not a first cause that should be considered one of equal, if not of greater, value than any to which we have alluded ? I think there is. If I am right in my theory, the healthy mucous glands of the gingivæ do not secrete tartar. It is an abnormal secretion from glands in an unhealthy condition. Now, the question arises, What is it that destroys the healthy action of these glands and makes them a source of danger ? If we can answer this question, we have gone a long way in the solution of our difficulty. And just here I hesitate somewhat, for I do not feel quite sure of my position, but I am anxious to place the thot before you, in hopes, at least, of exciting criticism, and obtaining new light where I am so much in doubt.

I am strongly, then, of the opinion that a natural or acquired roughness of the neck of the tooth, under the free margin of the gum, is the main cause we are seeking. That such a roughness is far more common than is generally supposed, I am fully convinced, and also that it is no forced conclusion to consider it a source of irritation to the open mouths of the glands in contact with it. It is quite possible, likewise, that just here the *role* of micro-organisms may be most important to consider, and that the poisonous tomines they produce, in growing, may have a most injurious effect. Unfortunately, direct experiment in this direction is difficult to carry out, and we can only reason in an indirect way ; but the field is inviting for research and thot, and offers vast possibilities in the way of treatment. Of one thing I feel quite confident, and this I say from the light of many years' practice, that if the neck of the tooth, under the margin of the gum, is kept clean and polished, no tartar of any description will gain a lodgment on it.

There is but one meaning to all I have said so far in its relation to treatment. Taking the ground I do, that a local irritant is the prime cause of the trouble, and that constitutional conditions only indirectly modify or influence its character and duration, all treatment must be based directly in the line of removing this irritant, and then in bringing the parts affected into a normal state. The mode of procedure should be precisely analogous to that in surgery, which requires the removal of a splinter from the flesh, or foreign body from a wound, as a preliminary to bringing

about a healthy condition of the affected parts. Nothing more and nothing less is required.

First, then, we have the mechanical removal of the tartar, or other exciting causes, by means of instruments specially devised for that purpose. In the use of instruments, tho, the personal equation plays an important part, and instruments and methods will vary with the mental and physical peculiarities of each individual. All meet on common ground, tho, in a few essentials, first among which is the complete removal of the tartar with as little injury to the soft parts as possible. For this purpose Dr. Cushing devised a set of instruments to be used on the push-principle, and Dr. Black strongly endorses them. My objection to them is twofold: First, they fail to reach all portions of the tooth to be operated on; and, second, their use endangers the soft parts; furthermore, the push motion, which separates the tartar from the root, does not remove it from the pocket, but leaves it there to be a further source of irritation. The force required to separate the tartar from the tooth, at times, is very considerable, and it is difficult to stop the instrument in time. Still, I would not be without them, but I could not rely on them altogether. Those I prefer work on the principle of the hoe or scraper, and most of my work is done with them. The forms or shapes are almost numberless; and there is far more danger in not having variety enough than in having an excess. So much of success depends on readily reaching every portion of the coated tooth. To reach around and between roots—especially molar—requires many apparently eccentric shapes. Each operator, tho, will be able to study them out for himself. Some of those I most commonly use I have brought with me, and will be happy to show to any one of you.

But the steel, however cunningly fashioned, will often fail to reach all parts, and we must seek other means to accomplish our ends; and no other I know of is available except an acid, and this I constantly make use of. It takes very little acid to soften any form of tartar sufficiently to enable us to wash it off by a strong stream of water from a syringe; or, it can be wiped off with a small pledget of cotton wrapt around a plantina point. It is a mistake to use the acid as liberally as many do. A few minims of an eight or ten per cent solution of sulphuric acid, following the scraper or hoe, will generally suffice; but if more is required—and it may be—the applications should be twenty-four or forty-eight hours apart. I employ the chemically pure acid, and dilute it myself. The aromatic sulphuric acid I long since discarded. Instead of the acid, peroxide of hydrogen may be employed to good advantage, its solvent action on the tartar being nearly equal to the acid. In fact, just here it acts like an acid.

Sometimes, where a single tooth will be badly affected, so much so as to be very loose and shaky, and yet a good portion of the root-membrane and socket be in a fairly healthy condition. Of course, the constant motion of the tooth tends to still further break up its attachments and hasten its loss. A simple device I have frequently employed is here most serviceable. Tho I do not know of any other dentist using it, it meets so directly the necessities of the case, I take it for granted it is by no means new or peculiar to my practice. I refer to a brace so made as to make the neighboring firm teeth support and hold in place the loose one. The manner of making them will readily suggest itself. They should be so constructed that the patient can easily remove them and put them in place. The fit should be good, and great care should be taken in its adaptation. A patient who has once worn one of these braces will never, so long as the tooth remains do without it, so long as the teeth are inclined to be loose. Even where there is a vacant space next the loose tooth a satisfactory brace can be made, the vacant space being so filled in as to prevent the food crowding under it.

Sometimes it will happen that one root will be so badly affected—as with molars—that it will be impossible to save it, and it will become a source of danger to the remaining sound ones. Amputation of the offending part is here clearly indicated,

and should be resorted to without delay. For this purpose I generally use the engine, armed with a sharp fissure-bur. In this way it can easily be cut off, and without shock to the remainder of the tooth.

Let me here draw your attention to the fact that when the disease attacks pulpless teeth, full success in treatment can seldom be hoped for; at the best, the actual loss of the tooth can only be retarded. The reason is manifest. The periodontal membrane has a twofold source of vitality. The nerves and capillaries going to nourish and sustain it enter it from opposite directions,—from in and around the gingival border and from its apical end. Either source of supply is sufficient of itself to keep the membrane in a fairly healthy condition for a long time; but if both are affected or destroyed, the intervening membrane soon loses its vitality and becomes necrosed. There is seldom much pain accompanying this death of the periodontium. As it dies it seems to disintegrate, and dissolves out; and when the tooth is extracted, not a particle of the membrane will be found adherent to the root, but it will present a clean and polished appearance.

The age of the patient, the duration of the disease, and the general condition of the patient have to be all considered in treatment. If, from any cause the parts have lost a portion of their vitality, and do not respond quickly, or not at all, to treatment, then the case becomes hopeless. As a rule, we can only assist nature in bringing about a cure, first by removing the exciting cause of the trouble, and then by such tonic applications as may bring new life to the tissues enfeebled by age or disease. All this portion of my subject I must beg leave to omit, so great is the diversity of opinion as to their relative values and their specific action. For myself, there are few to which I attach any special value; and if nature, unaided, or assisted only by giving her a fair chance, cannot bring about the desired ends, I do not expect much help from local applications.

DISCUSSION.

Dr. James Truman.—It is a mistake to say that the loss of teeth from pyorrhea alveolaris was greater, probably, than from all other causes combined. It depends largely on his definition of pyorrhea alveolaris. Allowing the largest latitude for that definition, taking in all the senile teeth, and including all those that have suffered absorption through the action of tartar, as well as those that can be justly said to be destroyed by this disease, we would not have a number that would at all compare with the number destroyed by caries. But has he any right to take in senile teeth, and the teeth that have been destroyed by tartar? Those teeth that have been injured by deposits, or lost in old age, where absorption has taken place, cannot properly be included; their loss is due to an entirely different action. Also those teeth that have been lost or loosened by salivation are to be thrown out; we should include only those affected by the pathological condition which we term pyorrhea alveolaris.

The essayist takes the position that the presence of pus does not represent the disease. What is pus? If I understand the origin of pus, it is this: irritation precedes what we call inflammation, and inflammation produces what we term pus, from two processes: first, emigration of the so-called white blood-corpuscles; and, secondly, the breaking down of tissue and the retrograde metamorphosis of the tissue to its original protoplasmic elements. Is it possible to have inflammation without one or both of these processes going on? The moment you have irritation you have an enlargement of the blood-vessels and a congested condition, and when that occurs, you have the emigration of the white blood-corpuscles, and eventually a breaking down of the tissue and retrograde metamorphosis. Can we have inflammation, such as we understand by pyorrhea, without pus? Certainly it does not appear to me to be so.

The essayist further says the name was a misnomer. That is, in one sense, true. But some words change their meaning. All words represent an idea, and that idea may change in the course of time. When the French writers named this disease

pyorrhea alveolaris, it meant to them precisely what the term conveyed—pus originating from the bone surrounding the teeth. In the course of time that idea has changed, but the name remains; and I think it is well to continue it. If Dr. Allan had been a teacher as long as I have, probably he would understand how difficult it is to go before a class of young men and talk on subjects, and have to enter into a definition of the different terms, which have been given by various individuals when they had found those that represented their ideas, little thinking that in the course of time the conditions will change, and their terms may no longer represent the pathological conditions. Is this name entirely wrong? Dr. Black, whose work in this direction we all fully appreciate, has shown us clearly that the periosteum is made up of inelastic fibers that extend from the cement to the bone without break; and if inflammation occurs in the periosteum, it is necessarily carried to the cement on the one side and to the bone on the other. Therefore, is it wrong to call this disease pyorrhea alveolaris? I do not think it is. As the essayist states, nine times out of ten tartar is the cause of the disease. Now, if nine times out of ten tartar is the cause of this disease, we ought to have it in all cases where tartar is found. He acknowledged that ordinary salivary calculus was not the cause of this disease; but the tartar which he found on the teeth or roots he called serumal tartar. He has taken up the old, old song of serumal tartar, and affirms dogmatically that it is serumal tartar. I have yet to learn of a single investigation that has been made to demonstrate the existence of this characteristic tartar. What is it? If I understand it, it means a calcareous deposit from the serum of the blood. We all know very well that there is scarcely an organ in the body that may not receive such deposits; but we have no evidence that this serum tartar, so-called, comes from the serum of the blood. May it not come from pus? because pus can deposit calcareous particles as well as any fluid of the blood. As long as we do not know it does come from the serum of the blood we have as much right to affirm—as this gentleman has to assume the contrary—that it is derived, as ordinary tartar, from the saliva.

Now, what is the genesis or origin of this pathological condition? Does it originate from tartar? Not if I understand it. Does it originate from the roughness that Dr. Allan spoke of, at the gingival border of the teeth? Possibly; but where does that roughness come from? When you take a patient in hand, and that patient states to you that in the morning when he brushes his teeth the blood will ooze from the gum, "that his teeth bleed," you know, and we all know, what that condition is. Here and there a tooth will present a bright red line at the border-line of the gum. The moment that is touched blood will ooze from it, by the disturbance of the capillaries at that point. That is the beginning. And if you take it in hand at that stage you can stop pyorrhea alveolaris. It has nothing to do with tartar. It may come from constitutional disturbances; it may come from some form of nephritis, or a long siege of sickness. What then follows necessarily after this? Immediately succeeding we have a development of micro-organic life. That I demonstrated twenty years ago. On examination of these cases I found large quantities of bacteria throughout the broken-down tissue. I soon learned they had something to do, tho I did not then appreciate the full extent of their action, with all these inflammatory conditions; and you dentists, every one of you, can and do make those conditions in the mouths of your patients by careless work. When you place a rubber dam, or a clamp, or ligatures on teeth, you produce irritation, and the patient will complain. You take off the instrument, and you allow the patient to go away without any treatment. In forty-eight hours there will be a development of micro-organisms, and pain will result, and irritation at the neck of the tooth; and if it is not stopt at that time, it may go on till this pathological condition which we call pyorrhea alveolaris appears.

What is the treatment? First, no dentist should put a rubber dam in the mouth, or a clamp on the teeth, or do anything of that kind that is liable to raise inflamma

tion at the necks of the teeth, without applying an antiseptic. For this purpose I know nothing better than sulphate of quinia, mixt into a paste,—not because it is the best germicide, but because it is more lasting than other agents.

This disease has its origin in inflammation of the periosteum, or pericementum, of the roots of the teeth. There is no question about that. I am satisfied, by the investigations of others, that I have always been right in that respect, and I have been teaching it for many years. It naturally follows, therefore, that if we are to treat the teeth properly we must direct our attention to the micro-organic life first, and not to the tartar, which is secondary. Has Dr. Allan ever found his so-called tartar below the line of healthy pericementum? I cannot say that I ever did. The tartar comes in afterwards; first, disturbance of the pericementum, then the deposit of tartar. Remove that tartar and what is the result? Always a necrosed tissue. I have never succeeded in building up the periosteum beyond that line. Dr. Atkinson asserts that he can build the periosteum up to the gingival border of a tooth. I never have been able to do it. If there is tartar there, it should be removed, but it is not the original cause of the trouble; and Dr. Allan himself says that the roots of teeth that have been lost through this pathological condition are shiny and without periosteum. If that is so, how is he going to do anything with it? The use of mechanical instruments should be secondary. I have treated successfully many cases of pyorrhea alveolaris, and rarely have I used an instrument. I do not find so much of that tartar as some seem to. I find it on senile teeth; but that is not pyorrhea. I do not think any man here ever saw a case of pyorrhea alveolaris on the lingual surface of the inferior central incisors. You find it on the anterior surfaces but not on the posterior; because the tartar is there to protect the lingual surface. Where tartar is, there cannot arise this pathological condition.

The treatment is necessarily much in accordance with that stated by Dr. Allan. I do not differ with him materially on the subject generally. In the treatment it is necessary first to remove any foreign substance that may be present, whether food or other deposits; then inject into the pocket peroxide of hydrogen. I follow that up with sulphuric acid. I am glad to find Dr. Allan uses altogether the commercial sulphuric acid. I long ago abandoned the use of aromatic sulphuric acid, as not being adapted to our purposes. I think we owe the introduction of this agent to Dr. Atkinson. I have used it for many years in this particular work. Magitot recommended chromic acid. I never had any satisfaction in its use, nor any of those more powerful agents. I use the ordinary commercial sulphuric acid, but stronger than Dr. Allan uses it; a twenty-five-per-cent solution, and sometimes even stronger than that; but I do not allow it to remain on long. I apply it with a sharp stick around the teeth. It, of course, turns the parts of a dark color. I allow it to remain two or three minutes; not more; just sufficient to burn out the dead tissue and dissolve the tartar; then immediately apply bicarbonate of soda, which brings away every portion of the dead matter. After a little time has elapsed I wash it out with warm water; then apply sulphate of quinia. I have used this for years successfully. If you want to know the philosophy of it, look into the *materia medica* books, and you will find it described. The sulphate of quinia will remain there longer than any other antiseptic I know of. If the pain returns in a few days, repeat the sulphuric acid, and after that continue the antiseptic treatment. Then, after the parts have become healthy, you must use an antiseptic wash to keep them in proper condition. If the pocket remains, there will be a return of the disease, in spite of all your efforts, if you do not take necessary precautions to obliterate it.

This mode of treatment is not original with me, except the bicarbonate of soda and quinia. I have used these for several years with the most decided success and the greatest satisfaction.

Dr. Sudduth.—This is a subject of great interest to the profession, and, if time permitted, I would like to go into it fully. I can heartily second what Dr. Truman has said regarding the relation of serumal tartar to this disease, and the deposit found

on the teeth being secondary to the disease. The initial phase of the disease we do not know. No man has ever been able to tell what is the cause of pyorrhea alveolaris. There is a catarrhal process; but what causes that to be set up has not been solved. The deposit on the roots of the teeth is evidently a result of the catarrhal process. First there is irritation; then follow micro-organisms; and they in turn become a source of irritation, but their direct connection with the disease has never been determined.

The treatment that has been advocated—the use of aromatic sulphuric acid or commercial sulphuric acid—is good; but you should follow it up with some stimulating antiseptic. About a year ago I presented to the profession some tablets of silico-fluoride of soda, made after a formula of Mulford, of Philadelphia. It is coming to be used in surgical practice, especially in ophthalmic cases, and has almost taken the place of boric acid in operations on the eye. It is not poisonous. I mentioned this remedy before the Pennsylvania State Society a year ago last June. No one has taken it up, or, so far as I know, said anything about it. The object in bringing these remedies before the profession is to have them tested. This summer I have again distributed samples to members of the profession, hoping they would try them, and report the results of their use in this treatment.

Dr. Rhein.—We are confident this disease is sometimes constitutional. The worst cases of pyorrhea that have ever come under my notice have been cases absolutely devoid of tartar, either of the so-called serumal kind or any other. Speaking after considerable experience in the treatment of the disease, the opinion that I have come to hold is that where pyorrhea is the result of some old constitutional trouble, as we frequently find it—and we frequently find it in those chronic forms, some cases running for ten or fifteen years—it results from some febrile disturbance, or some great disorder of the general system, which was cured, but left that condition of pyorrhea which became chronic. Those cases look the worst when they come to us; but they are always curable; and it is cases of this kind that have misled a large number of the profession to the belief that every case of pyorrhea is curable. There are cases, which, to my mind, are not curable; at least I should be delighted to see them cured by any one. The great difficulty in coming to a determination in regard to this is that the majority of us make no effort at a differential diagnosis when we see a case for the first time. Our first duty should be to assure ourselves that the patient has existing in his body no pathological condition; and to that end I always insist on making a very careful examination of every vital organ, including a thorough examination of the urine. The urine is really one of the most important means by which we can come to an opinion on the subject. But no conclusion should be arrived at from a single examination; it should be taken at different intervals. By an examination of that kind we may find, in people who are subject to pyorrhea and who are advanced in life, a sluggishness of the circulatory system, which is sufficient to produce this result. In numerous cases where an examination has shown symptoms of Bright's disease, or phthisis, I have found all the treatment and hygienic care that could be given would not prevent the disease returning in some cases that were beyond medical treatment, as acknowledged by the best professional men. I will give a practical case, showing the disease is caused by some pathological condition existing at the time.

A few months ago a gentleman aged 35, came to me from out of town; his mouth was in very bad condition; pressure on any tooth would cause a large exudation of pus; the gum around the gingival margins was whitened; there was a general hypertrophy of the tissues; and he expressed himself as utterly devoid of any hope of retaining those teeth in position. He had been with the first Stanley expedition through Africa, and in that expedition had contracted that terrific fever which they have there; he told me he had taken as much as eighty to one hundred grains of quinine a day. After an examination of his mouth, I could find no other cause for the condition of things than his African experience. I made

a careful examination in this case. I had the examination made by a specialist, who is capable of making both physical and urinal examinations; and his system was found to be otherwise in a perfectly healthy condition. That man's case surrendered to treatment, and his mouth is now in a healthy condition. Had I found the condition of Bright's disease in his system, as he imagined, I should never have given a good prognosis. I gave such a prognosis at the start, and his case at the present day bears me out in my judgment of the case.

Dr. Allan.—I do not know that I have anything further to say on the question, except it be in regard to Dr. Black's papers on the subject. If there is anything in our literature which equals them in thoroughness of detail I have not been able to put my hand on them. I am quite certain those papers published in the "American System of Dentistry" are the best compendium of this subject we have.

In regard to the number of teeth lost through this disease I still think I am right, according to the figures and data I have been able to obtain, notwithstanding Dr. Truman's assertions to the contrary. I took great pains to hunt up statistics, and, I think, taking the definition of this trouble as an inflammation, or lesion of the peridental membrane, having its origin around the necks of the teeth, my statement is not so far from correct; but I was careful to state that it was only an approximate estimate, that the number of teeth lost through this disease might be equal to those lost through caries. Dr. Truman, I think, must have erred in his judgment or memory, as regards the formation of pus. It is not an absolutely necessary sequence or result of inflammation. Many inflammations exist in the body, in joints, and even near the surface,—even violent inflammations,—without the formation of pus, so long as micro-organisms are not present. Therefore, if the mucous membranes are maintained intact, there is no necessity there should be any formation of pus in those places. Clinical examinations of cases, where tartar is present and the gums tumefied, have frequently shown them to be devoid of any indications of pus. I think I am right in saying pus is not a necessary result of inflammation.

Dr. Truman speaks of my remark that, after dead teeth had been extracted, where the peridental membrane had been destroyed, and its connection with the circulation cut off, they were found to be, from the apical end to the gingival border, polished and clean. So I did; but I did not say it was so if the tartar had been left on them. The supposition was that it had been removed. I spoke of that case to show the manner in which destruction of the peridental membrane takes place when the circulation had been cut off both from the apical and gingival borders.

I still hold to the point which I wish to make,—that roughness at the gingival border or neck of the tooth—as Dr. Sudduth suggested indirectly, and not with any intention of saying I had put it in my paper, but which I did have in my paper—may possibly be the occasion of the deposit of tartar; and that if the neck of the tooth is kept clean and polished, no tartar would form there, and we would not have pyorrhea alveolaris in any of its forms. I am quite certain that, where the disease is so perfectly amenable to treatment,—following this line of thought,—and where we have perfect cures, such as I have frequently had without a particle of medication, but simply by mechanically removing the tartar, that the more this point is studied, the more the theory will be adopted that pyorrhea alveolaris has its origin in a deposit on the necks of the teeth from the gingiva. Whether the deposit is serumic in origin or not, I do not know. I do not think there is any indication whatever that it comes from the saliva. It is deposited under the margin of the gum, away from the openings of the salivary ducts, where the saliva has almost nothing to do with it. Whether it comes from the serum of the blood I do not know; but all its physical qualities are usually totally different from that of salivary calculus in every way. Therefore I think there is no ground for saying it comes from the saliva; and we are necessarily thrown back to another origin. If you can think of any other origin than the one Dr. Black has suggested, it is more than I can.

Chemistry, Dry?—That Depends.

PROFESSOR STUBBLEFIELD is quoted as having said: "Every one who had the privilege of a regular curriculum remembers that the most despised, obscure, and generally uninteresting branch of the whole course was chemistry."

Such has not been our observation. In 1847 and 1848 Professor John Locke, of the Medical College of Ohio, lectured at 2 P. M. A narrow hall-way led to the door of his lecture-room. So anxious were the classes to get seats desirable for hearing the lectures and witnessing the experiments, that by 1 P. M., and sometimes before it, that hall-way would be crowded full its entire length. And this was an accompaniment of every lecture. But you will say he was an extraordinary teacher. Then take another illustration, where the teacher was certainly not above ordinary:

While the present writer was connected with the Ohio College of Dental Surgery, the attendance on the chemical lectures was equal to that of any other department. We made frequent counts, and cannot be mistaken. Even in the first course of lectures, when the teacher was also a member of the class, and had but little time to prepare his lectures, this was true. And we still thank that class for its loyalty. It is evidence that the science itself, and not the manner of its promulgation, was the secret of the class' interest in it.

Our observation teaches that whenever chemistry is dry the fault is in the teaching. We have often heard college graduates complain of its dryness, when a little conversation revealed the fact that they had not been taught the laws of combination, or the doctrine of equivalents. Such a course is as dry as is learning to swim without water.—Editorial in *Ohio Journal*.

Flagg's Plastics and Plastic Filling.

To the Editor of the Dental Record:—

DEAR SIR:—The third edition of this book appears again with an extraordinary statement. On page 56 two essays of alloys are stated to be made by me, but in no respect, and in no proportion does any metal bear the slightest resemblance to any alloy ever made by me; nor would alloys, made according to the published assay, have any properties like any alloy I make. In one assay two important metals in the alloy are not even mentioned. Dr. Bogue is aware that the assays are not correct, and no doubt Dr. Flagg is also aware of the fact.

Dr. Flagg also expends much eloquence on the properties of gold and platina in alloys. It is evident that the use of gold in an amalgam has never entered into his mind, and he remains unaware that gold is used in amalgam in this country, at all events solely for the purpose of making it clean and pleasant in working, and that its other properties are comparatively unimportant, and in many respects similar to those of tin. It is very well known that the setting time of any silver-tin alloy can be ruled by the proportion of platina added. Why Dr. Flagg should take so very much trouble to inform his readers that he does not know this, is not easy to explain.

THOS. FLETCHER.

Warrington, Eng.

A Caution to Hard Drinkers.—Inebriates are always dangerous subjects for ether or chloroform. The heart is weakened, and fatty degeneration of various degrees is present. Any substance which lowers its action is perilous, because of the inability of the heart to recover, and the tendency to paralysis. But drinkers have always fatty hearts, and sudden paralysis is likely to appear with the first inhalation of chloroform. In chronic cases of inebriety, where extensive organic changes have taken place in the brain and spinal cord, paralysis of the respiratory centres occurs first, and respiration stops before the action of the heart. Artificial respiration may prevent death if promptly used. A sudden checking in respiration and heart beat where ether or chloroform are used is a danger signal of the gravest importance.—*Quarterly Journal of Inebriety*.

An Important Change.

WE are in receipt of the following news item: "Dr. W. X. Sudduth, of Philadelphia, has been appointed secretary of the Dental Department of the University of Minnesota. He will fill the chair of pathology and oral surgery, and be practically the dean of the school." This is a deserved compliment to Dr. Sudduth, who has done so much valuable work in oral pathology and histology, mostly in the east, but latterly at the University of Iowa. We do not know whether this change will carry the *International Dental Journal* to Minneapolis or not, but it is an advantage to the university to secure the time and labor of an enthusiastic investigator, and we offer our congratulations to the school and to Dr. Sudduth. Dr. W. P. Dickinson, of Dubuque, Iowa, has concluded to locate in Minneapolis, so Iowa loses two of her foremost men and Minnesota gains them.—*Dental Review*.

Elliott's Suspension Engine.—Therapeutics become the means to the end when combating disease, and in the department of mechanics every appliance which will help to direct this energy to the purpose sought should be available; and, perhaps, the most appreciable instrument of modern practice is the dental engine. Here I desire to make a point which, it seems to me, has been grossly overlooked, and you will excuse me for the reference. Seventeen years ago I had the pleasure of introducing to the profession an engine known as the Suspension. To-day, I am able to declare—as proven by those who have had it in constant use since that time—that it fully sustains the claims then made for it. I apprehend that its merits are not fully appreciated, for the reason that it has not been presented to the profession with as much push as has other inventions. With an independent motive-power—water or electricity—it becomes the *ne plus ultra* of all implements. There is in it a vast latitude and freedom of motion; no back lash; no slack bands; nothing to encumber floor-room; no necessity for a great amount of machinery to adjust and keep in repair. In referring to this instrument I have no interest, other than to remind you of the best of all.—*Dr. W. S. Elliott*.

Oxyphosphate Fillings.—There are a few points about oxyphosphate fillings worthy of mention. We have all noticed that what is left on the mixing dish is usually more adherent and harder than what we put into a cavity. Both these facts depend on circumstances which are usually absent in the mouth. To make a dense filling it should be allowed to set thoroughly before the dam is removed, and moisture should be excluded for at least twenty-four hours. This may be accomplished by using a coating of chlora-percha over the finished surface of the filling. If the dam is left on till this varnish has hardened by the evaporation of the chloroform, it will not wear off for a week, and I have known it to last two months. Such fillings are comparatively permanent. Where we wish to utilize the sticking or cement quality of this material, the best result is obtained by first lightly coating the surfaces with the liquid. This is why the material is so adherent to the slab. I have thus cemented regulating fixtures to teeth, and at the completion of the work found it troublesome to detach the cement from the enamel after the fixture has been forced off.—*Dr. Ottolengui*.

THE following resolutions were passed by a unanimous vote, and with enthusiasm, by The North Carolina Dental Society at its recent session in Wilmington. In explanation of them it is necessary to say that the standard of dentistry has been greatly lowered in this State by the colleges in graduating men who have never had any previous training by a good preceptor. They do shoddy work, and few of them ever affiliate with our Society; hence it is impossible to remedy the evil unless we go to its source. We can point with pride to our young men who have served a pupilage of two years under our best dentists before going to college. They are adding strength and honor to the profession, and are real benefactors to the people. Hence these resolutions:

WHEREAS, We are desirous of raising the standard of dentistry in North Carolina, and of increasing the individual proficiency of each member of the profession; and, WHEREAS, In our opinion, we cannot accomplish this while the colleges encourage young men to enter them from the business avocations of life, without any previous office pupillage; and,

WHEREAS, This is inimical to the spirit of our Constitution and By-Laws; therefore

Resolved, 1st. That we, The North Carolina Dental Society, offer our protest against any college that shall discourage office pupillage before entering college.

2d. That we will use our influence against any college, or college professor, who shall thus lower the standard of dentistry, or who shall knowingly receive a pupil from our State without two years' office pupillage, in accordance with our Constitution and By-Laws.

3d. That a copy of these resolutions be sent to some of the leading journals for publication.

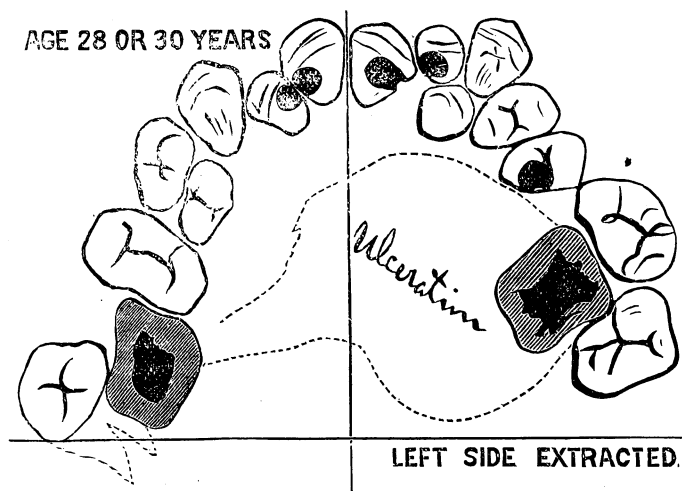
H. C. HERRING, *Pres.*

C. A. ROMINGER, *Sec'y.*

EDITOR ITEMS:—Can you kindly afford me room for a few curiosities? I have one upper central, with a sharp spur on the root. One hen's foot lower wisdom. Two chicken's head upper wisdom, and two mitten-shaped. One second molar, with cow-horn wrinkles on its roots. One premature upper wisdom, a mere shell, open at both ends, from which I shook the dentine in dry powder when I extracted the tooth. Evidently it was a dead tooth when erupted; there was no sign of a pulp, or a nerve in root.

Two upper first year molars in a patient aged fifty, with three cusps and one root, badly exostosed. These teeth were sound, but irritable. The other teeth were normal. Gorgas attributes exostosis to "constitutional diathesis." Then why were not the lower first molars affected? I attributed the cause in this case to local susceptibility, to irritation of root periostium in teeth abnormally formed.

I have recently extracted for J. E. McK—, nine upper teeth, all on one side. These teeth, I think, would have baffled the "big guns" to make normal and save, as the very long and crooked roots were in too hard a jaw, and in two cases badly ulcerated. One of the nine was a large milk cuspid, or a supernumerary, with partly absorbed root. The other eight teeth measured nine and a fourth inches in length; four of them measured five inches, and the cuspid one and seventeen-thirty-seconds inches.



This patient was presented by Dr. Stevens, and I soon expect to repeat the terrible operation on the other side. In the absence of cast or cut I send outline drawing of these upper teeth as I found them.

W. E. GORHAM, M.D.

Wiscasset, Maine, June 12, 1890.

Bridge-Work Easy to Repair.

BY almost any good method of construction, the bridge in position offers an ominous appearance when the patient has succeeded in breaking off a porcelain face "chewing soup," or "biting ice cream." In comparison with other service the bridge worker's fee is large, not to say excessive. Persons who can afford the luxury, are rich enough to travel, and not infrequently visit the metropolis. Thus we in this section see more than our share of broken bridges. If the piece was readily detached, a tooth could be replaced for from five to ten dollars, as circumstances indicated; but if an hour must be spent in partly destroying the attachments, and that amount of extra repair must be done before the piece can be replaced, the affair is different. The fee must be greater; yet, notice, that the benefit to the patient is the same in either instance. Dr. F. T. Van Woert, of Brooklyn, has solved the problem. His method is as follows: The tooth chosen must have the pins longitudinally placed. To these a piece of Gib wire (drawn triangularly in shape) is riveted, the apex of the triangle towards the tooth. With an instrument of his invention a dovetail, which exactly fits over the wire, is made in the platina to be used as a backing. The tooth being slid into the slot thus made, is fitted to whatever form of root attachment the operator chooses, and waxed into suitable position. The tooth is then removed and the backing and pivot attachment invested and soldered together. Thus is produced a crown with a removable porcelain face, which is eventually held in position with cement. In the construction of large pieces, two sets of teeth should be fitted in position, one set being cemented to the bridge, and the duplicate given to the patient. Thus at any time a tooth could be replaced by any dentist in half an hour. Or where no duplicates are made the operation could be as quickly done by any dentist acquainted with the method.—R. OTTOLENGUI, *Dental Review*.

A Valuable Toothache Remedy.—For violent toothache dentists may depend on the following combination for its marvelous and instantaneous effects. It is a remedy of unrivaled power, and absolutely reliable. "Break a hypodermic tablet of $\frac{1}{4}$ grain of morphine sulphate, and atrophine sulphate 1-150 grain in four parts, dissolve one part in ten drops of warm water thoroughly. A perfect solution of the partial tablet having been made, it is drawn up into the syringe, and the contents slowly and cautiously injected into the hard gums surrounding the aching tooth. Several applications may be made, till all of the contents of the syringe are injected. No danger of bad after-effects can result from the dose used, as it represents but 1-16 grain of morphine sulphate, and 1-600 grain of the powerful alkaloid derived from belladonna, "atrophine sulphate." "Sulphate of atrophine is freely soluble in water, the pure atrophine is not. Tablets of the above formula may be purchased of John Wyeth & Brother, of Philadelphia. They will prove an invaluable addition to the armamentarium of every progressive dentist." Always prepare a *fresh solution for every case*.—Dr. Brown, *Amer. Jour.*

Without a knowledge of how prime elements become proximate elements, of which tissues, organs, and systems are built, we shall be utterly at a loss to comprehend the functions of production, nutrition, growth, and decay; of which there are two marked varieties—the decay of molecular metamorphosis, in which prime elements are used up in nourishing functioning bodies, and the retrogressive changes in the various forms of diseases by which structures are destroyed beyond the power of unaided repair. The first is the result of the running out of the line of longevity of the tissue involved; and in every instance where plastic pabulum is at hand, the tissue is maintained in full type and vigor—is physiological. The second is where retrogressive nutrient metamorphoses take place from deficiency, or surcharge of pabulum, or pabulum with a cacoplastic tendency; and this gives the basis of pathology, demanding therapeutics to bring about favorable results.—Dr. W. H. Atkinson.

For Our Patients.

Mothers Will Understand This.

THE following lines have been strung together by the house-surgeon of a country dispensary. They consist entirely of the expressions used by mothers in describing to him the complaints of their infant offspring:

"'E's cutting 'is teeth across the loins with a wheezing on the chest;
We always thinks for this complaint Roosian taller plaisters the best,"
"'E's come out all into a rash; I am sure 'e 'as the measles;
'E's worked up'ards and down'ards, and 'is milk comes up in curdles."
"'E's a-wasting to a shadder; I am sure everything I've tried;
I gives 'im boiled bread and arrowroot, yet 'e's never satisfied."
"Mother says 'e's got consumption of the bowels, but I think it all lies in 'is 'ed."
"'E's got the thrush which is a-going through 'im,
So I give 'im a cooling powder, which give 'im rather a doing."
"'E's cutting 'is teeth crossways; they ain't quite through yet.
'Is little 'ed swets so at night, it makes the piller soaking wet."
"'E's inwardly convulsed; 'is little eyes roll so in 'is 'ed;
'E's like a burning coal at night; I can't abide 'im in the bed."
"'E's collecting water in 'is 'ed whilst cutting 'is back teeth;
'E's got the eating diabetes, for 'e does nothing else but eat."
"Every time 'e draws 'is breath it comes right from 'is little stummick;
'E's got the red-gum all over 'im; 'is teeth it is what's done it."
"When 'e waked the water stood upon 'is 'ed in drops, and reg'lar smoked;
'Is breathing was that 'ard at night, I thought 'e must 'ave choked."

—*British Medical Journal.*

All About an Aching Tooth.

"DO you tink, boss, dat diss yar toof—putting his finger on a decayed inferior molar—would hurt much to took um out?" asked a coal-black, dudeishly-dressed darkey of a dentist.

"I am inclined to think," said the dentist, with a mischievous look, "that the tooth would not suffer much pain during the operation."

"Could you put sumthun on de toof to make um ease up a little when um am com'n out, boss?"

"I could liquefy it," the dentist replied, with a significant nod of his head to his assistant. "This would cause a partial paralysis of the abnormal function of the tooth, when a lateral motion would cause it to relapse into a comatose condition, and out it would come."

"Am dat what um kall laffen-gas?" he asked.

"It is simply a process in which carbonated steel is the chief factor," said the dentist.

"Would I be 'sleep at dat time, boss?"

"Perfectly oblivious to all outside surroundings."

"How much you take, boss, fur pull'n um out in dat yar way?"

"I charge ten dollars; fifty cents in cash, balance in quarterly instalments, and keep the tooth for security until the entire amount is paid."

"Dat am fair, boss, and I 'spect I hab it done."

"Well, then," said the dentist, "take this seat,—pointing to the dental chair—and we will proceed with the entertainment."

"Dat stuff you put on de toof aint pizen, is it, boss?"

"Of course not."

"Do you squirt it on, boss?"

"No, I dare not do that, for if any of the spray came in contact with your eyes it would occasion great pain. You must, therefore, keep your eyes tightly closed while I apply the physical process."

"You will hold up, boss, jiss when I say de word, eh?"

"Yes."

"Now go slow, boss, 'cause I'm in no hurry," he said faintly, while closing his eyes by the doctor's directions.

Soon a yell like a clap of thunder alarmed the entire neighborhood, while the darkey's feet struck out at right angles from his body with spasmodic jerks. The yell, too, came in successive waves, for it required all the doctor's strength to start the tooth, and when the task was accomplished, and the patient had recovered his breath, he angrily said :

"What for you didn't hold up dar, when I holler'd?"

"Did it hurt?" the dentist asked, with a serious look.

"Lor, golly, boss, I tot' I wuz kleen gone ded, shuah."

"Why didn't you keep your eyes closed, as I told you?" said the dentist, looking injured innocence all over. "No wonder it hurt, and it's a great mercy, young man, that your head didn't come off way down to your boots."

"I 'spect I did open my eyes, boss, but I couldn't help it; yes, sah, I 'spect I did. I jess made a fool of miself, dat's all, boss. I don't blame you, sah. No, sah, 'taint your fault, boss," saying which, the darkey departed, leaving the two dentists to enjoy a hearty laugh over the incident.—*The Practical Dentist.*

Cheerfulness, and Therefore Usefulness.

IT is not profitable or happifying to brood over cares and sorrows. They hatch fast enough, even under the most adverse circumstances. A man, like the present writer, may be the owner of a whole fleet, but if it consists entirely of *hard-ships*, he will find its possession unprofitable as well as uncomfortable. Esop tells of a race of rabbits stricken with a universal discontent. They concluded the whole creation was against them. They met in convention, and decided to emigrate. They would go where there was nothing to hurt nor destroy; where they would enjoy the privileges of "life, liberty, and the pursuit of happiness." They gathered their gripsacks and started. During the first day they came in sight of a deep, broad river. The caravan rested on the hill-top, while chosen leaders went forward to find means of crossing. As they approached the river bank, the frogs were frightened by their approach, and plunged into the water. With one accord they hopt back to their comrades, and reported that they need go no further; they were not the underlings they had supposed. They had found people afraid of them, and they would stay right on the spot, and drive these frogs into the river whenever they came out; and in this way they would find complete happiness.

Some men become despondent, and even morose, under very light afflictions. Others remain cheerful under very severe suffering. The former accomplish very little in the race of life, while the other class often do more than men in good health. Lindley Murray was forty years in bed, and few men of his day excelled him in usefulness. John Calvin was an invalid; and collateral history intimates that St. Paul was also. Thomas Hood and Alex. Stephens suffered with every breath. As a general rule, invalids should, in self-defense, engage in useful pursuits.

According to our observation a majority of men become, to a great extent, mentally inactive at the age of forty to forty-five. True, in a narrow range of subjects, with which they have been heretofore familiar, they may manifest a good degree of mental activity; but they seldom have the energy to reach out after new lines of thought. It is fortunate for them if they have previously cultivated habits of steady, or systematic thought. Will-power is one of the first mental faculties to become weakened; and when once a man has given up his mental industry, he seldom is able to force himself to take hold of his former tasks.

We wish to benefit our younger professional brethren by these remarks. If they will cultivate the habit of writing their thoughts, they will acquire accuracy in thinking, and their thoughts will expand by the exercise. It is a sad mistake to regard the close of a college course as the termination of the educational career.—Editorial in *Ohio Journal.*

Editorial.

Some Reasons why Many Dental Students Fail After Graduating.

1ST. Most enter college without proper preparation. What would be that of a young man applying to an ordinary literary college without having mastered the commonest branches of education? He would be laughed at. But when just such a young man presents himself to the faculty of a dental college, he is received without protest. Even if there is required proficiency in a few English branches, a superficial examination, calling out a few stumbling answers, suffices to pass him. As for a preliminary acquaintance with the theory or the practice of dentistry,—“O, well, never mind that; you will have plenty of both here.” Thus, green from the plow or the anvil, the street or the smoke club, the young man is ushered into the lecture-room to hear the profound propositions of science and the mysteries of professional lore. Of course, it is all a mystery to him, the more so, as he has not had the merest smattering of Latin, in which most of the names and terms he hears are found. Even with the greatest desire to learn, he can do little more than open his eyes in wonderment, and his mouth in blank ignorance. To this description there are some exceptions. What a disgrace that it should apply to any, much more that it should be common. When a good English education, and, at least, a smattering of Latin, with a respectable training under an experienced dentist shall be required before entering college, a long step will be taken toward presenting to the profession acceptable members.

2^d. Many students who might graduate with honor, are prevented by the lack of discipline in the college. So few restraints are thrown around the students, such fooling and foolery are allowed, so much waste of time and money and energy, that even young men, at first better disposed, are drawn into this whirlpool of nonsense and lost to the sober pursuit of their profession. Even during lectures, there is disorder, inattention and foolery, that would disgrace ill-bred children. Is this an overdrawn picture? We hope so, for the good name of our colleges. We do know strong efforts are made by a few to correct the evil. If in any college it is already corrected, we shall be pleased to publish the fact.

3^d. All our students are hindered, and nearly all are sent out immatured, by the want of more practice. Thanks to a large array of popular educators in almost every other department of learning, education is no longer mere memorizing. It is something more than the folding of the hands to take in anything that is given, like so many peeping birdlings. Professors in other departments see that the food given is digested; that facts and statements are clearly and logically arranged into closely woven theories; that theories are proven by practice; and that the very fingers are so trained as to make practice skilful. Education now means the development, control and usefulness of the muscles as well as the brain—the manipulation, maturity, vigor, and manly brawn of the whole man. And all this must be transferred to the dental college. In a measure, it is; for the dental college is a training school; it must be more so.

4th. By the lack of a high standard of morals and esthetic tone in our colleges, many students are sent out totally unfit for professional standing in the community. So much looseness of habits and conduct is allowed, so much dissipation, so much mockery, ridicule and vulgar interference at propriety and gentlemanly conduct, that the student who is proof against all, and comes out of the college as good as he went in, is an exception. Some can wade through the slum of tobacco slobber and the disgusting smoke of a hundred human smoke stacks, and still be clean; but O, how many are defiled beyond all recognition of the gentleman. By this noxious habit, and those other habits one bad habit is sure to bring in its wake, how many dental students are lost to the profession. How can we expect such students to come

into the profession with esthetic taste, clean person, and pure morals? If they can be tolerated in the college, they will not be by the best class of patients; and without this class, what is the practice of dentistry worth?

Said a clean-looking, refined, intelligent lady to us as, for the first time, she entered our office:

"Doctor, do you use tobacco?"

"Of course not," we replied.

"Then you shall do my work. I have been to two dentists to have some work done, but each smelt so of the filthy stuff I have left them in disgust."

A dentist must be clean in mind and body; if he is not, his very atmosphere will betray him.

It is difficult to come from a polluted and polluting association without defilement. Our dental colleges and dental professors should be as clean and pure and esthetic in character, surrounding and influence, as the most attractive dentist and dental office, and as all offices and dentists ought to be.

The Study of Words.

FROM PROF. TRENCH'S WORK.

[Most of us can criticise composition tho few write tersely, clearly, uphoniouly. Prof. Trench's work on *The Study of Words* is admirable, but we believe the following, taken from his introductory lecture, will show his own style diffuse. The first column is as we find it in his book, the second, as we amend it. Which is the better? We are taught in philology that any superfluous word in a sentence weakens; and yet, we find in this small extract 325 redundant words. It will richly repay perusal for its admirable figures and its valuable thoughts; see if you do not think these better clothed in a less display of superfluity. Precision, clearness, and beauty of diction is a power and a grace; therefore an occasional lesson is pleasant and profitable; for we are all apt to be loose and verbose, if we are not stimulated to criticise our style.—ED. ITEMS.]

THERE are few who would not readily acknowledge that in worthy books is laid up and hoarded the greater part of the treasures of wisdom and knowledge which the world has accumulated; and that chiefly by aid of these they are handed down from one generation to another. My purpose in the present, and in some succeeding lectures, which by the kindness of your principal, I shall have the opportunity of addressing to you here, is to urge on you something different from this; namely, that not in books only, which all acknowledge, nor yet in connected oral discourse, but often also in words contemplated singly, there are boundless stores of moral and historic truth, and no less of passion and imagination, laid up—lessons of infinite worth which we may derive from them, if only our attention is awakened to their existence. I would urge on you, though with teaching such as you enjoy, the subject will not be new to you, how well it will repay you to study the words which you are in the habit of using or of meeting, be they such as relate to highest spiritual things, or our common words of the shop and the market, and all the familiar intercourse of life. It will indeed repay you far better

In worthy books is hoarded much of the treasures of wisdom and knowledge the world has accumulated; chiefly by aid of these they are handed down from one generation to another. My purpose is to show that not only in books and oral discourse, but often in words contemplated singly, there are boundless stores of moral and historic truth, passion and imagination, — lessons of much use to us if we are awakened to their importance.

It will repay you to study the words which you are in the habit of using and meeting, whether relating to spiritual things, or to common words of the shop and the market, and to the familiar intercourse of life. It will indeed benefit you far more

than you can easily believe. I am sure, at least, that for many a young man his first discovery of the fact that words are living powers, has been like the dropping of scales from his eyes, like the acquiring of another sense, or the introduction into a new world; he is never able to cease wondering at the moral marvels that surround him on every side, and ever reveal themselves more and more to his gaze.

We indeed hear it not seldom said that ignorance is the mother of admiration. A falser word was never spoken, and hardly a more mischievous one; for it seems to imply that this healthiest exercise of the mind rests, for the most part, on a deceit and illusion and that with better knowledge it would cease. For once that ignorance leads us to admire that which with fuller insight we should perceive to be a common thing, and one demanding therefore no such tribute from us, a hundred, nay, a thousand times, it prevents us from admiring that which is admirable indeed. This is true, whether we are moving in the region of nature, which is the region of God's wonders, or even in the region of art, which is the region of man's wonders; and nowhere truer than in this sphere and region of language, which is about to claim us now. Oftentimes here we move up and down in the midst of intellectual and moral marvels with vacant eye and with careless mind, even as some traveller passes unmoved over fields of fame, or through cities of ancient renown—unmoved because utterly unconscious of the great deeds which there have been wrought of the great hearts which spent themselves there. We, like him, wanting the knowledge and insight which would have served to kindle admiration in us, are oftentimes deprived of this pure and elevating excitement of the mind, and miss no less that manifold teaching and instruction which ever lie about our path, and nowhere more largely than in our daily words, if only we knew how to put forth our hands and make it our own. "What riches," one exclaims, "lie hidden in the vulgar tongue of our poorest and most ignorant. What flowers of paradise lie under our feet, with their beauties undistinguished and undiscerned, from having been daily trodden on."

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no such tribute from us; but many times, it prevents us from admiring what is admirable.

This is true, whether we are moving in the region of nature, which is the region of God's wonders, or in the region of art, which is the region of man's wonders; and nowhere truer than in this sphere of language.

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And this subject upon which we are thus entering ought not to be a dull or uninteresting one in the handling, or one to which only by an effort you will yield the attention which I shall claim. If it shall prove so, this I fear must be through the fault of my manner of treating it; for certainly in itself there is no study which *may* be made at once more instructive and entertaining than the study of the use, origin, and distinction of words, which is exactly that which I now propose to myself and to you. I remember a very learned scholar, to whom we owe one of our best Greek lexicons, a book which must have cost him years, speaking in the preface to his great work with a just disdain of some, who complained of the irksome drudgery of such toils as those which had engaged him so long—and this, forsooth, because they only had to do with words; who claimed pity for themselves, as though they had been so many galley-slaves chained to the oar, or martyrs who had offered themselves to the good of the rest of the literary world. He declares that, for his part, the task of classing, sorting, grouping, comparing, tracing the derivation and usage of words, had been to him no drudgery, but a delight and labor of love.

And if this may be true in regard of a foreign tongue, how much truer ought it to be in regard of our own, of our "mother-tongue," as we fondly call it. A great writer not very long departed from us has here borne witness at once to the pleasantness and profit of this study. "In a language," he says, "like ours, where so many words are derived from other languages, there are few modes of instruction more useful or more amusing than that of accustoming young people to seek for the etymology or primary meaning of the words they use. There are cases in which more knowledge of more value may be conveyed by the history of a word than by the history of a campaign."

And, implying the same truth, a popular American author has somewhere characterized language as "fossil poetry"—evidently meaning that just as in some fossil, curious and beautiful shapes of vegetable or animal life, the graceful fern or the finely vertebrated lizard, such as

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now, it may be, have been extinct for thousands of years, are permanently bound up with the stone, and rescued from that perishing which would have otherwise been theirs—so in words are beautiful thoughts and images, the imagination and the feeling of past ages, of men long since in their graves, of men whose very names have perished, these, which would so easily have perished too, preserved and made safe for ever. The phrase is a striking one; the only fault which one might be tempted to find with it is, that it is too narrow. Language may be, and indeed is, this “fossil poetry;” but it may be affirmed of it with exactly the same truth that it is fossil ethics, or fossil history. Words quite as often and as effectually embody facts of history, or convictions of the moral common sense, as of the imagination or passion of men; even as, so far as that moral sense may be perverted, they will bear witness and keep a record of that perversion. On all these points I shall enter at full in after lectures; but I may give by anticipation a specimen or two of what I mean, to make from the first my purpose and plan more fully intelligible to all.

Language, then, is fossil poetry; in other words, we are not to look for the poetry which a people may possess only in its poems, or its poetical customs, traditions, and beliefs. Many a single word also is itself a concentrated poem, having stores of poetical thought and imagery laid up in it. Examine it, and it will be found to rest on some deep analogy of things natural and things spiritual; bringing those to illustrate and to give an abiding form and body to these. The image may have grown trite and ordinary now; perhaps through the help of this very word may have become so entirely the heritage of all, as to seem little better than a commonplace; yet not the less he who first discerned the relation, and devised the new word which should express it, or gave to an old, never before but literally used, this new and figurative sense, this man was in his degree a poet—a maker, that is, of things which were not before, which would not have existed, but for him, or for some other gifted with equal powers.

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—so in words are beautiful thoughts and images, the imagination and the feeling of past ages.

The very names of the men who uttered them have perished, and the words would have perished too, if not preserved and made safe for ever by their inwrought etymology. The phrase is a striking one; the only fault which we might find with it is, that it is too narrow. Language is “fossil poetry;”

and it is fossil ethics, and fossil history. Words quite as often and as effectually embody facts of history, or convictions of the moral common sense, as of the imagination or passion of men; even as, so far as that moral sense may be perverted, they will bear witness and keep a record of that perversion.

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The Variety of Artificial Teeth.

IF twenty-five years ago we could have had the variety of artificial teeth to select from we find now, it would have been a great pleasure. The delicate variety of hues, the natural shapes, the great number of sizes, and the admirable adaptation to various temperaments, are astonishing. What were the Wilmington teeth even fifteen years ago? Now they are of forms so natural and qualities so pure, strong and lifelike, with a surface so translucent, that, when placed in the mouth, one can hardly tell them from the natural. Other houses are making equal progress.

And yet we go into dental offices where the stock of teeth are really a disgrace. How proper teeth can be selected from such a skeleton supply for the variety of subjects passes our comprehension.

Dr. W. Xavier Sudduth has resigned his position as Professor of Pathology and Oral Surgery in the Philadelphia Polyclinic, to accept a similar position in the medical department of the University of Minnesota. He has also resigned his position as Director of the Histological Laboratory of the Medico-Chirurgical College, to accept a similar position in the University of Minnesota. The doctor will remove with his family to Minneapolis about September 1st.

This change will necessitate the severance of Dr. Sudduth's connection with the *International Dental Journal* as its active editor and business manager.

Philadelphia thus loses a gentleman of eminent scientific attainments in the departure of Dr. Sudduth for the wider fields of the growing West.—*Med. World*.

Awful.—W. P. Beach, M.D., tells us, in *The Brooklyn Medical Journal*, of an abscessed bicuspid producing "a large abscess on the knuckle of the little finger of the left hand." The doctor, therefore, is of the opinion that all dead teeth should be removed from all mouths.

South Dakota Dental Association.

THE seventh annual meeting of the South Dakota Dental Association was held June 3, 4 and 5 in Yankton. It was the best attended and most profitable ever held by this vigorous, young society. Dr. W. H. Barker read a paper entitled "The Broken Arch," which was good, and elicited much discussion. Dr. Brown an essay on "Mechanical Dentistry;" Dr. Maxom on "Dentistry Historical;" Dr. Huestis gave a clinic, a large compound cavity in an upper molar, using Williams' crystalloid gold, filling the cavity two-thirds full, then using pellets with the Byrnes' engine mallet. The filling was completed in much less time than could have been done with cohesive gold, and seemed to be as well done. Dr. Sale gave a clinic of two gold crowns. Dr. Brown also one of gold, also some alloy fillings. Dr. Moore, repairing a vulcanite plate, badly broken, which demonstrated many useful points. Dr. L. A. Dix gave us a clinic on extracting, which was skilfully done. She is the only lady dentist in the Dakotas.

Next place of meeting at Aberdeen. Officers elected for the ensuing year: President, Dr. W. H. Barker, St. Lawrence; Vice-President, Miss L. A. Dix, Yankton; Secretary, O. M. Huestis, Aberdeen; Treasurer, C. M. Maxom, Vermillion. Board of Examiners met and examined papers of four applicants.

The Sixteenth Annual Meeting of the North Carolina State Dental Society, just held in Wilmington, was pleasant and profitable. The following gentlemen were elected for the ensuing year:—H. C. Herring, President; J. E. Thyche, First Vice-President; J. D. Harper, Second Vice-President; C. A. Rominger, Secretary; J. H. Hunter, Treasurer; Sid. P. Hilliard, Supervisor of Clinics; J. H. Durham, Essayist. The next meeting will be held in Durham, beginning on the first Tuesday in May, 1891.

The Michigan Dental Association.

AT the meeting of the Michigan Dental Association, the principal points in Dr. Crouse's remarks were: First. That by combining in some such an organization as the Dental Protective Association, we band the strength of ten thousand men into one, and all defense necessary can be made with but little more expense than would be required for an individual. The preparation of one case will answer for all, and all evidence can be collected better by an association than in any other way. Second. That it is very important that all get into the association at this time, for the reason that an appealed suit to the Supreme Court, before the formation of the Protective Association, will probably be decided in favor of the Crown Company, owing to deficiency of evidence and imperfect presentation. If the Crown Company win this suit they will send notices all over the country, thereby demoralizing the profession and causing many to pay them money, who should be in the Protective Association and avoid that calamity. The Protective Association will be ready with new evidence and a new record, and can take care of its members against any claims of the Crown Company.

Resolved, That the Michigan Dental Association heartily approves the aim and plan of the Dental Protective Association; and, that it is further

Resolved, That it is the duty of every member of the dental profession in this State to join the Dental Protective Association; it is also

Resolved, That Dr. Crouse be requested to furnish the dental journals with an abstract of his remarks for publication.

W. H. DOWANER, }
W. D. SANDUS, } *Committee.*
DOUGLAS, }

If you are not in the association, it will not take care of you when the time comes. If each man in the profession will pay ten dollars and assume a responsibility of ten more, without further assessments, we will have an organization that is sure to break up all this abuse and save the dental profession an annual outlay of, on an average, one hundred dollars each to unjust claimants. Remember, it will cost more than ten dollars later, to join, and will certainly cost more than that if you do not protect yourself.

WM. CLELAND, *Secretary.*

Meeting of the American Dental Association.

THE railroad arrangements are not all completed; but enough is known to assure, at least, the usual reduction of one and a third fare, on certificate plan, by all the different passenger associations.

Arrangements are being made for a special train from Chicago, which will leave Sunday afternoon and reach Excelsior Springs Monday morning. This will give the entire day Monday for the different sections to complete their reports. All parties wishing to go on this special train, will confer a favor by letting us know at once, so that we may know how many to arrange for. Just what rate will be secured, for the round trip, is not definitely settled; but we expect a low one. A notice will be issued later, giving exact time of starting and route selected.

Application has been made for reduced rates for the four associations—the American Dental Association, College Faculty Association, National Board of Dental Examiners, and the Dental Protective Association. We are trying to get this rate good for ten days, so that we need not adjourn until everything is finished.

Parties purchasing tickets should be sure to get receipt, showing that they have paid full fare going. This will enable them to get return ticket for one-third regular fare.

J. N. CROUSE, *Chairman Ex. Com.*

2231 Prairie Avenue, Chicago.

THE National Association of Dental Faculties will meet on Monday, August 4th, at 10 A. M., at Excelsior Springs, Mo. JOHN S. MARSHALL, *Secretary.*
Chicago, Ill., July 3, 1890.

The Post-Graduate Dental Association of the United States.

THE annual meeting was held at Chicago, June 25, 1890, and the following gentlemen were elected officers: President, Geo. H. Cushing, M.D., D.D.S., Chicago, Ill.; Vice-President, Dr. R. H. Cool, Oakland, Cal.; Secretary and Treasurer, Lewis S. Tenney, D.D.S., Chicago, Ill.; Executive Committee, R. B. Tuller, D.D.S., Chicago, Ill.; Dr. J. M. Gallehugh, Chenoa, Ill.; Dr. G. W. Milton, Silvertown, Colo.

This association is but a year old, but it has good prospects of becoming a large and popular organization, and has a grand work before it. Its object, aside from the same general one of most dental societies, is to particularly encourage and stimulate post-graduate studies and the establishment of facilities for them in dental colleges. It also contemplates, when its membership will admit of it, establishing a systematic course of home study, with benefits not unlike the Chatuqua Literary Society, perhaps, but the plan is not yet sufficiently developed to admit now of outlining.

While the name "Post-Graduate" would imply an association of graduates only, the broad view is adopted of extending the work among all legal practitioners who may desire to join and co-operate; but practitioners not graduates are not eligible to membership till they have passed a post-graduate or practitioner's course in some reputable and recognized dental college.

Members of the profession, who desire to become members of the Post-Graduate Association, should correspond with the Secretary, Dr. Lewis S. Tenney, 96 State street, Chicago. The membership fee is \$1. Annual dues, payable in advance, \$1. Certificates of membership are issued when the member qualifies. Membership may be obtained through correspondence, when evidence of eligibility is presented.

The Missouri State Dental Society met at Pertle Springs, July 8.

We can Recommend Dr. E. Parmly Brown, of New York, as a first-rate instructor in bridge and crown work, etc.

The Tenth International Medical Congress meets at Berlin, August 9. There will be a Dental Department, to which all reputable dentists are invited.

The "Varsity" says: Oxford University is the largest in the world; it embraces twenty-one colleges and five halls. It has an annual income of \$6,000,000.

The National University, of Washington, is evidently flourishing, and its Dental Department with the others of this popular institution.

Dr. Ingersoll's Questions and Answers in Dental Science is a marvel of plainness, conciseness and comprehensiveness. It is the condensation of sixty college lectures. Wilmington Dental Co. Price, \$2.00.

Dental Mirror is a new applicant for dental favor. Of course, Dr. Ottolengui will make it interesting. Send him a dollar, and see if we do not prophesy rightly. The Dental Publishing Co., 63 West Fifty-fifth street, New York.

The Students' Manual of the Dental Laboratory comes to us revised, enlarged and improved. We congratulate Dr. Haskell on the speedy sale of his first edition, and on the increased demand for this. Wilmington Dental Co., Philadelphia.

Halsey's Rubber Dam and Apron is quite an institution. It prevents the rubber dam coming in contact with the face, facilitates respiration and lessens the flow of saliva during operation. It also acts as an apron, and as a pocket to catch every particle of gold waste so generally lost. (See page 351, July ITEMS.)

The Periosteum and Peridental Membrane, by Prof. G. V. Black, is an exhaustive treatise; probably the most thorough of any work on this subject. We have alluded to this series of essays before, but its perusal, recently, has given us greater interest in the subject and the man. It is exhaustive and yet clear. W. T. Keever, Chicago. Sold by Wilmington Dental Co.

Miscellaneous.

Aluminum.

WITHIN the last year and a half C. F. Hall, an Oberlin student, who, through the development of the Cowles process, became interested in the subject of aluminum, started the Pittsburgh Reduction Company. As the Cowles boys had made their first experiments with a piece of chimney flue and a borrowed current of electricity from the Brush lighting station in Cleveland, so Hall secured his first aluminum in an oyster can. The Hall and the Cowles processes, which may be said to be modifications of one process, both the products of the Western Reserve brains, have inaugurated the aluminum age. At the last meeting of the American Institute of Mining Engineers at Washington, D. C., an entire session was devoted to the consideration of this topic, and eight or ten valuable papers were read. The so-called Herrult process from Neuenhausen, Switzerland, was described, but it seemed to be the unanimous opinion that it was nothing more than the Cowles process in a foreign land where no patent laws existed. Aluminum affords such a fascinating field of labor that men are heard of everywhere who have alleged processes of extracting it cheaply. Their number is legion, and has been ever since Deville's time. Professor T. Sterry Hunt, of McGill University, recently said: "The importance of this new instrument, which the Messrs. Cowles have placed in the hands of chemists for producing and controlling degrees of temperature never before attained, can scarcely be estimated, either in its economic or scientific aspect. The heat of this furnace realizes the dream of the alkahest, or universal solvent of the alchemists."

Practical men, doubtless, will inquire whether the aluminum industry has been really a paying investment to anybody. To this question even the most enthusiastic believer in aluminum and its future must reply that the industry so far has not been very profitable to any of the numerous persons and companies engaged in it. The reason given by the aluminum men is not that there is any doubt of the usefulness of the metal, at the prices at which it can now be produced, but that manufacturers do not yet understand its properties. They say that just as Bessemer had to wait for years before the merit of his process for making steel was acknowledged, so will the aluminum companies, which have laid the foundation of success, be compelled to wait till the merits of the beautiful white metal are more fully recognized, before fortunes can be made by separating it from the substances with which it is so tenaciously combined.—*Cor. Chicago Tribune.*

The Production of Pumice Stone.—As a matter of fact, none of the white pumice stone in general use is obtained from active volcanoes. It is true, Vesuvius has ejected pumice stone, for at the time when Pompeii was destroyed large quantities fell over the doomed city, but that pumice appears to have been only of diminutive size, and is gray in color, and of the same inferior character as that found to the north of Naples. It is also probable that volcanoes situate in the southern seas emit pumice, for accounts are published of vessels sailing through quantities stretching for miles on the surface of the water. This, presumably, is similar to that taken from the sea near the Italian shores. It is small in size, and in the form of pebbles, having been rounded by the action of the water.

We are indebted for our supply of stone to actual deposits of the article discovered in one or two quarters of the globe, the best of which is at present to be found in the island of Lipari, situate in the Tyrrhenian Sea. The island is scarcely visited by any but Italians engaged in trading in its productions, such as currants, carpers, wine and pumice. It is mountainous, and consists of tufts and lavas, and of highly siliceous volcanic products. The district where the stone is found is called Campo Bianco, or Monte Petalo (1,500 feet above the level of the sea). The effect produced by the first sight of the pumice deposit is curious, for, after riding a considerable distance, partly along precipitous paths, sufficiently dangerous to be interesting, and partly through vineyards and over grassy plains, one almost suddenly comes on a seemingly snow-clad, narrow valley inclosed by hills, also quite white, and the whole glaringly bright on a sunny day, such as can be experienced in this southern latitude. Into these hills workmen are ceaselessly digging burrows, working within by candle-light. In their excavations they came across many lumps of pumice stone, which are placed in baskets, subsequently being conveyed along the valleys to the sea-shore, where small boats are loaded, and sailed to the seaport near by, where the stone is sorted, packed and shipped to distant parts, either via Messina or Leghorn.—*Scientific American.*

Dr. Mortimer Granville's Hay-Fever Remedy.

POWDERED BORAX, one scruple.

Fresh powdered capsicum, *pure*, fifteen grains.

Mix very thoroughly, add

Carbonate of ammonia, finely powdered, ten grains.

Mix again thoroughly, and place in a two-dram bottle. Shake well at each using.

Employed as a snuff.

Thus carefully prepared, this is an excellent palliative.

Rheumatic Ointment.

A French quack doctor employs, with great success, an ointment for rheumatic pain. As we believe that modern physicians should be without any—opathy and take any good remedy, no matter what its origin, we give this one:

℞ Sulphuric acid..... 1 gramme.
Adeps præp..... 7 grammes.—M.

Owing to the difference in density of the two bodies, great care must be taken in mixing.

In quite easy rubbing with this mixture it brings about redness of the skin very rapidly, and acts as an excellent revulsive. In sciatica, rubbed along the course of the nerve, it gives rapid relief.—*Paris Letter in Times and Register.*

To Cure Warts.—Take common washing soda and make a very strong solution. Apply it to the wart four or five times a day. We have tried this, and have never seen one wart that this would not remove in a few days. It leaves no soreness at all. West Philadelphia, Pa. A. J. MOSLEY.

Capsicum as a Counter-irritant.—Dr. Henry J. Buck, writing to the *Lancet*, says: "I have used this drug for more than twenty years—I may almost say daily—and many of my patients will not travel without a bottle of the 'magic lotion,' as they call it. I find the simplest and most efficacious way of applying it is to soak a large handful of the crushed pods in half a pint of hot water for an hour, then strain, and bottle for use. A teaspoonful of eau-de-cologne added will help to keep the solution, or it can be well boiled after preparing. I then have it applied to the affected parts on a piece of linen folded three or four times, or on lint, and covered with gutta-percha tissue or a dry flannel. In this way the lotion may be kept on for hours without vesicating, and in many cases the skin is hardly reddened. The stinging and burning sensation produced by the capsicum lotion is, after a few minutes, welcomed by the sufferer, so magically does it often remove the rheumatic or neuralgic pain for which it is being applied. In acute torticollis a cure is often speedily obtained by covering the side affected with the application. In any form of neuralgia, rheumatism, subacute gout, pleurodynia, and such like, it will be found most useful, and may be reapplied over and over again during the day and night without any fear of vesication."

Chloroform and Ammonia Vapor for Croup.—Dr. B. W. Richardson, of England, gives his treatment as follows:

"Here are two agents, vapors of ammonia and chloroform, both capable of administration by inhalation, both antiseptic, and both readily combinable either with oxygen or common air. Ammonia is not only antiseptic, but is alkaline in its reaction, is a diffusible stimulant, and, in the blood, is a solvent. Chloroform is an antiseptic, a narcotic, and, as I have repeatedly demonstrated, an antipyretic. By the combination of the two vapors we secure, therefore, a remedy which neutralizes acidities, sustains the circulation, reduces pyrexia, holds the blood fluid, relieves pain, induces sleep, and resists decomposition.

"I take an alcoholic solution of ammonia (83° alcohol saturated with ammonia) and mix it in equal parts with chloroform. When the solutions are mixed, any water which separates is removed by blotting-paper, and in this way a mixture of ammoniated chloroform is obtained ready for use. In administering this compound by inhalation of the vapor I put one to two fluid drams of it in a bottle with a leather inhaler armed with an expiratory valve.

"From the first the ammonia vapor is deprived of much of its pungency by the presence of the chloroform, and, in time, as the narcotic begins to take effect, the pungency of the ammonia is covered so effectually that larger quantities of it can be inspired without cough or irritation."—*Medical World.*